

Municipal Journal

And Engineer

VOLUME XXVII.

NEW YORK, SEPTEMBER 22, 1909.

No. 12.

MIXING PLANTS FOR BITUMINOUS MACADAM ROADS



DUSTLESS AUTOMOBILE TESTING TRACK. TARRED MACADAM

MIXTURES of tar and asphalt with sand, stone and other hard materials have become the most common forms of improvement of road surface for highways, both urban and suburban, which do not demand harder pavements to resist severe traffic conditions. The mixing plants for sheet asphalt have reached the point of development where designs are almost standardized in all but minor details. But for making tar macadam a similar point does not seem to have been arrived at. Many of these mixtures are patented, and the machinery also, and very few descriptions of such have been published.

For this reason the following descriptions of English machinery used for this purpose are of considerable interest; the development of tar macadam roads having been fully as rapid and widespread in that country as in this. The illustrations and descriptions are from a book entitled "Dustless Roads—Tar Macadam," written by J. Walker Smith, City Engineer of Edinburgh, and published by Charles Griffin & Co., of London. This book is reviewed elsewhere in this issue.

In one plant that the author has under observation, illustrated by Fig. 1, the cob limestone is conveyed from the quar-

ries by means of a narrow-gauge tramway, which latter terminates at the hopper of the stone-breaker.

The wagons are emptied onto the stone-breaker platform and fed into the hopper by hand.

The stone passes through the breaker and screens, thence through a rotary dryer, and is conveyed therefrom into a trough mixer. The latter consists of a wrought-iron trough 14 feet by 2 feet by 2 feet 6 inches deep, of U shape in cross section, along the entire length of which runs a shaft to which is attached a series of cast-iron blades placed at a suitable angle, resembling the propeller blades of a steamship; these blades are revolved either forward or backward by means of a steam winch. This mixer is not steam jacketed, but there is no difficulty in making it so if desirable or necessary.

While the mixer is revolving the correct quantity of stone is allowed to pass into the trough and is evenly distributed along its length by the revolving blades, hot distilled tar at a temperature of about 250° F. being added by hand in specified quantities. After some three or four revolutions forward and backward, when the stone has become thoroughly covered with tar,

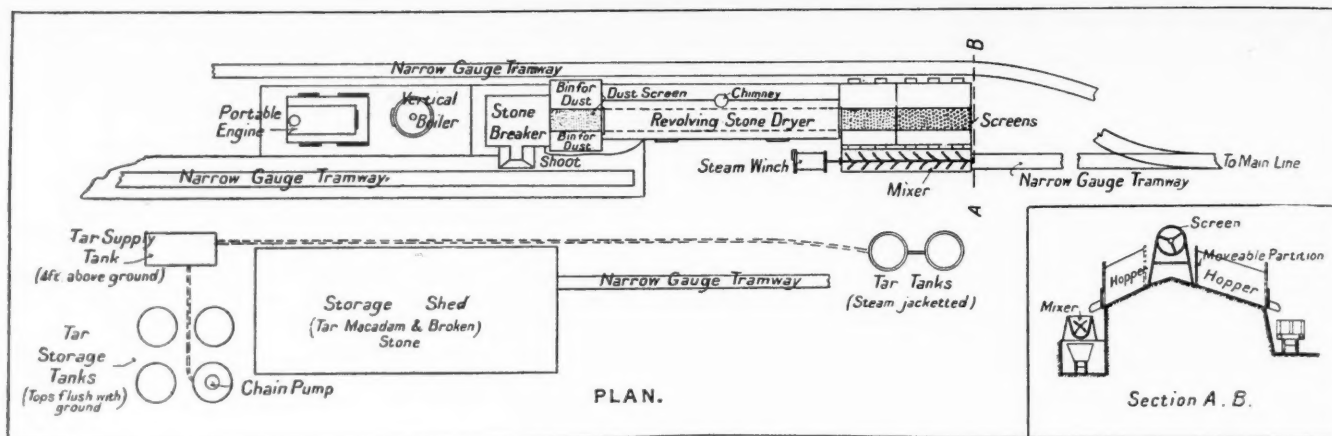


FIG. 1. PLAN OF TAR MACADAM MIXING PLANT

a door is opened at the delivery end of the trough and the asphalt is automatically screwed out into the trucks below, which are carried by a narrow-gauge railway to a staging over the railway company's siding and here emptied into the railway cars or stored under cover.

The refined tar is brought in large oil tanks by rail into the works, where it is run off into four large cylinders. From these cylinders it is pumped to tar boilers, which are steam-heated by means of coils so arranged that steam blows off at a

pressure of 50 pounds to the inch, representing a temperature of 250° F.; and the author considers that the constant temperature thus obtained and the consequent impossibility to overheat the mixture is, in the absence of continual skilled supervision, a matter of very high importance.

Another excellent, somewhat differently arranged, tar macadam works is illustrated by Figs. 2 and 3, and may be described thus:

These works are in connection with a Whinstone quarry

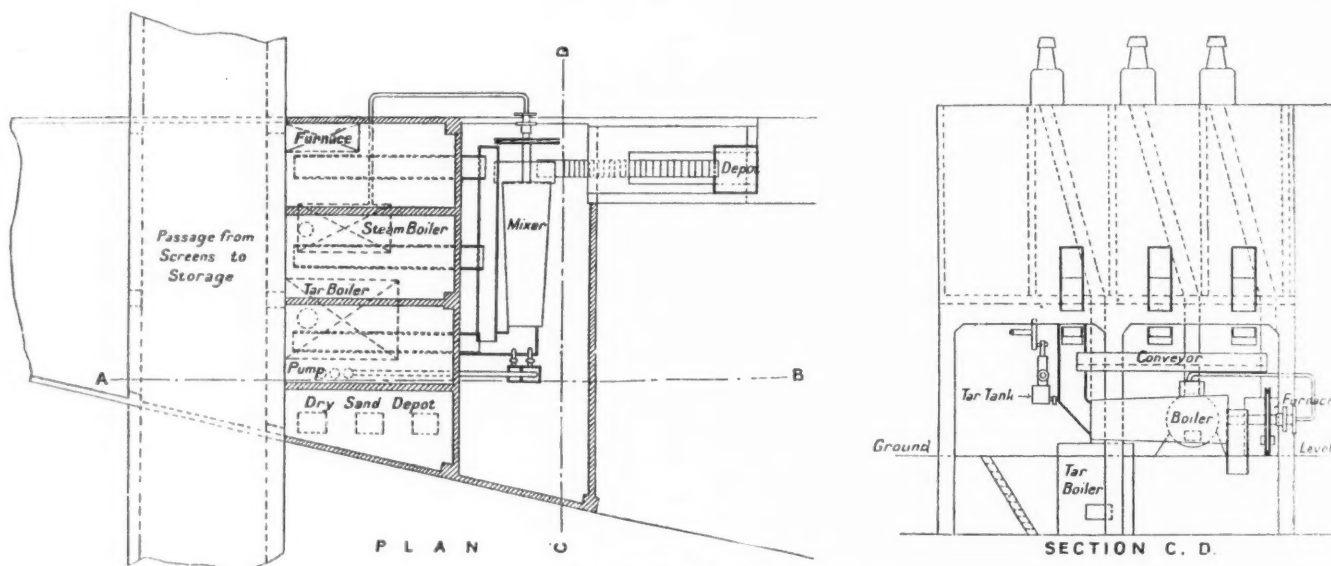


FIG. 2. TAR MACADAM MIXING PLANT

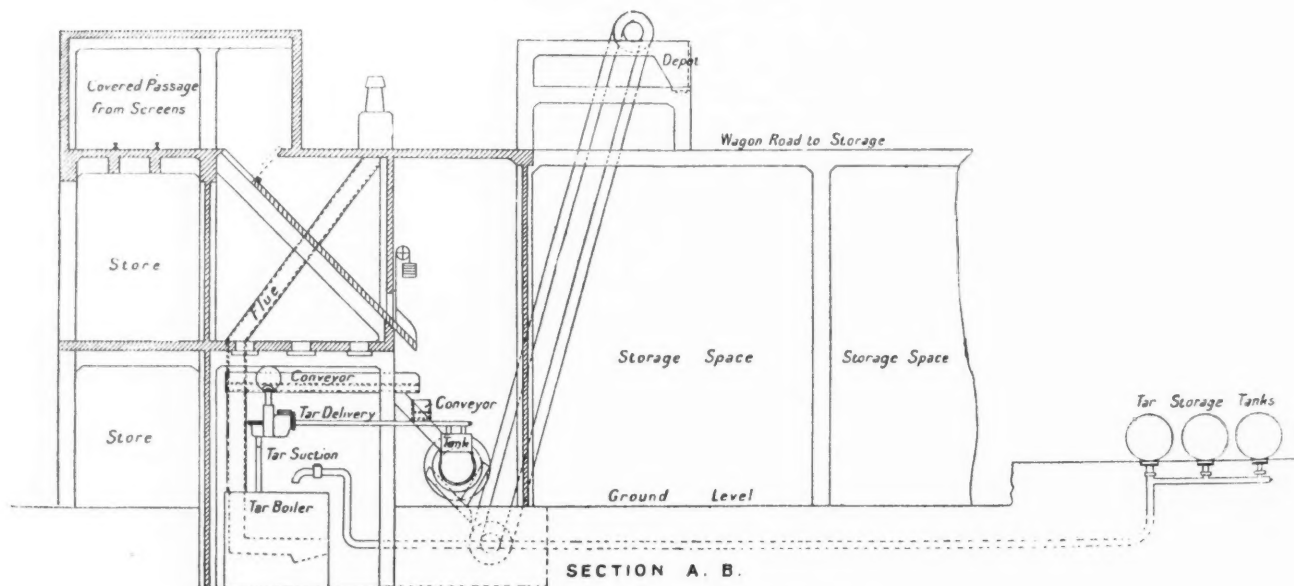


FIG. 3. SECTION OF PLANT SHOWN IN FIG. 2

supplying stone of a uniform excellence and very suitable for the preparation of tar macadam. The stone, as it leaves the screens of the breakers, is run by trucks along a covered passage, so that the breaking and screening are always done under cover, and even if the stone in cob should be wet there will be after breaking an exceedingly small percentage of damp surface. Arriving in trucks by the covered passage, the stone is tipped either direct into bins of ample capacity for the purposes of convenient separation and storage of different sizes, or if necessary and advisable it can be tipped direct by means of shoots into conveyors to the mixer. Otherwise it is tipped into the bins before mentioned, which, in the case under consideration—as is practically the whole of these buildings—are constructed in reinforced concrete for the purpose of strength with economy as well as for prevention of fire. From the bins the

aggregate can be discharged into the transverse conveyor in such proportions of size as is thought desirable and mixed in the conveyor running parallel with the mixer, and thence continuously discharged by means of a shoot from this conveyor into the end of the mixing machine.

The tar that is used is stored in large tanks and is introduced into the works distilled, of a given specific gravity and complying with certain physical tests, and advantage is taken of elevated ground to locate these storage tanks so that they can feed the tar boiler by gravitation. The tar in the boiler—in position indicated in Fig. 2—is, at the works, heated by fire direct, and, as will be seen from the cross section, the waste gases are passed by means of a flue through one of the bins for the purpose of drying the aggregate, while the waste gases from the steam boiler are similarly utilized for the second bin, and

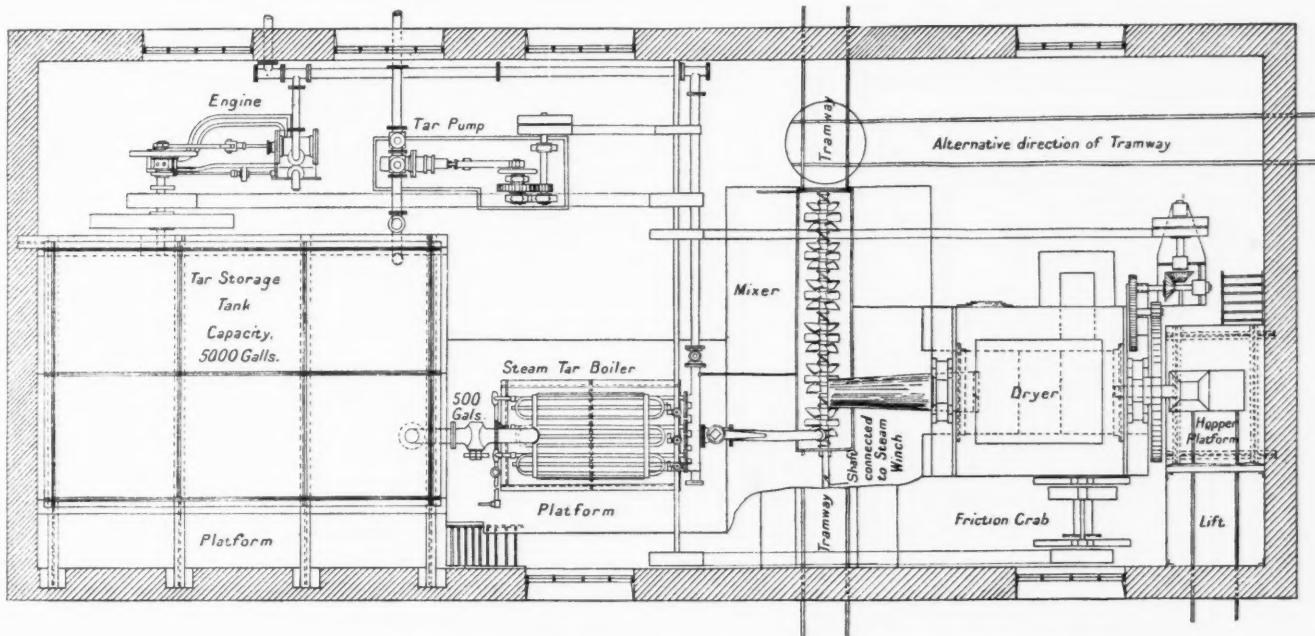


FIG. 4. PLAN OF TAR MACADAM MIXING PLANT

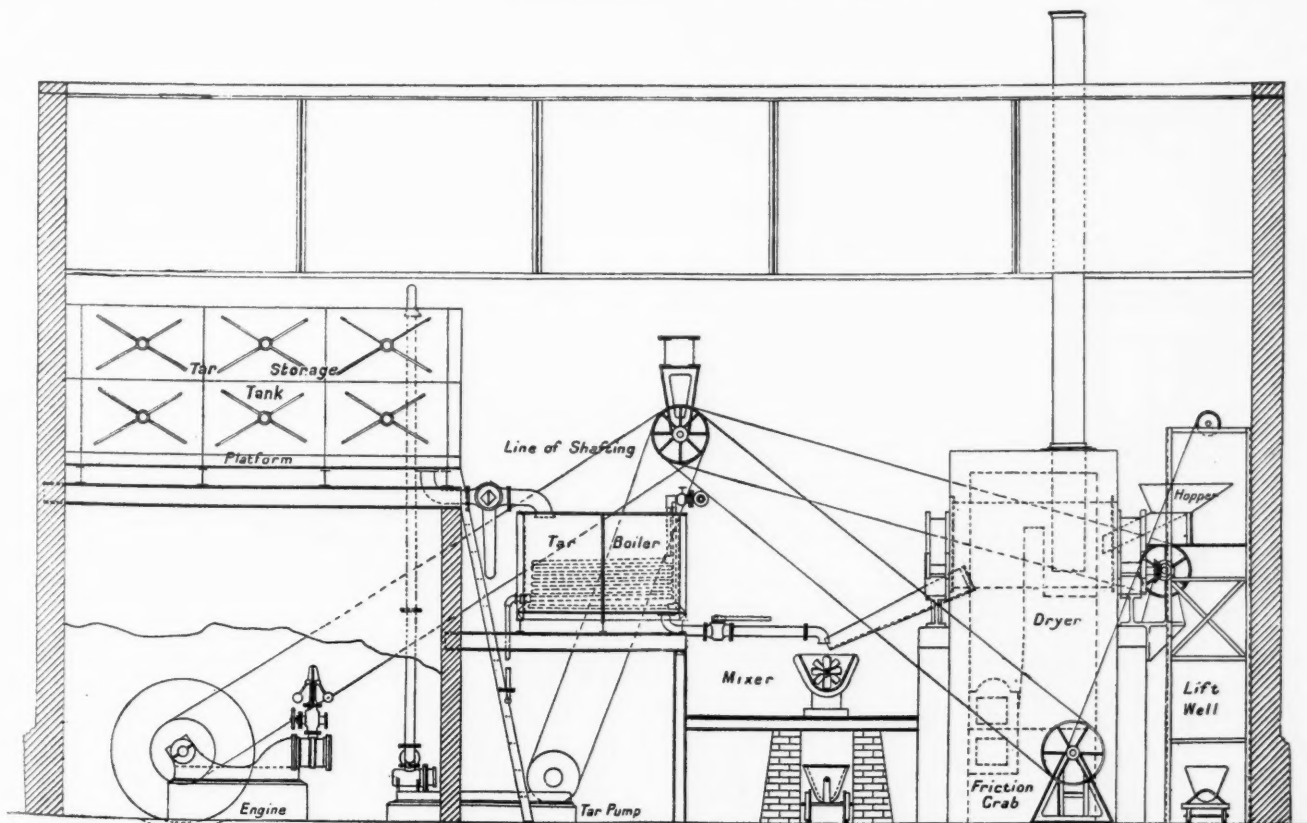


FIG. 5. LONGITUDINAL SECTION OF PLANT SHOWN IN FIG. 4

a special furnace is constructed for the third bin. (Personally, the author has great preference for steam heating of tar, in that the blow-off valve may be set at a certain pressure to correspond with the temperature required, there being thus no risk of the tar being overheated by the erring judgment of the personal element. Beyond the important factor of greater safety, however, there is no advantage in steam heating over heating by fire direct if the boiler is in charge of a skilled attendant.) When raised to a temperature of 250° F. the tar is lifted by a pump to discharge into a tank, the outlet from which can either be arranged to work automatically in accordance with the discharge of the aggregate by means of tipping measures, or it can be controlled by a valve regulating the amount of tar in accordance with the amount of aggregate that is fed to the mixer by the conveyor. The aggregate and the tar are thus brought to the mouth of the mixer, which is cylindrical in shape, having inner and outer shells, the space between forming the steam jacket, being supplied with steam from the boiler by an ingenious device, the patent of the quarrymaster, as, indeed, the author believes is the general arrangement of the mixer. On the inner shell there are fixed longitudinally four angle irons, and others are placed transversely, forming a spiral, with the object of accelerating the mixture from the source to the mouth of the mixer, which in its passage is, by the revolution of the cylinder, thoroughly well mixed. There is perhaps, by this form of mixer, some tendency for the larger aggregate to get through more quickly than the finer, but it is discharged together at the delivery end of the mixer and is then raised by means of an endless chain and buckets to an overhead depot, and either discharged direct into cars and taken away by rail, into carts, or into the storage spaces.

The following actual figures, representing a long period at these works, may also be of interest, as they embrace all charges incidental to the mixing, including interest upon and depreciation of plant.

[These figures of cost are based upon English standards of wages and of labor. While they may be of doubtful value as to total cost under American conditions, they at least give an idea of the relative costs of the several items.—Ed.]

Prior to the recent installation of the modern and labor-saving methods above described, the actual costs, excluding standing charges spread over several months, were as follows, viz.:

		Amount Produced	
Tons mixed.			
2¼ ins.....	908	} 11.8 gallons of tar per ton of mixture	
1½ ins.....	1,190		
¾ in.....	602		
½ in.....	281		
¼ in.....	676		
⅛ in.....	79		
<hr/>			
3,736			
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		Cost	
		Cost of Mixing.	
Tons.	Labor	Total.	Per ton.
37.36	Feeding mixer.....	\$149.50	\$0.04
"	Wheeling up.....	301.99	0.0808
"	Wheeling away.....	319.20	0.0853
"	Attending boiler.....	94.17	0.0251
"	General work.....	64.85	0.0172
"	Labor drying.....	150.90	0.0404
			<hr/>
			\$0.2888
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Material.			
	Coal	102.52	.0273
	Tar, 44260 gallons.....	2,236.05	.5983
			<hr/>
			\$0.9144

The completion of the plant as described has resulted in a saving, upon the basis of 50 tons per day, of 18 cts. per ton, and upon the basis of 70 tons per day—of which the plant is

now capable—of 20 cts. per ton, so that the total cost may now be stated thus, viz.:

Aggregate delivered to tar macadam plant.....	\$0.5456
Mixing tar macadam (in lieu of 91.44 cts. as per details in previous table)	0.7123
Interest, depreciation and repairs.....	0.2425
Establishment expenses for tar macadam (say).....	0.1162

Total cost of tar macadam in truck, per ton.....\$1.6166

To these prices there have to be added the railway rate for any distance that one may find to be necessary, the unloading and carting onto the site, spreading, rolling and sanding, which, when the whole are added together, the tar macadam complete 4 inches thick should be laid for a net figure of 40.4 cts. per square yard anywhere within twenty miles of the plant.

These two examples, the author thinks, are sufficient to show the immense possibilities there are, from an economic point of view, in the use of tar macadam manufactured by up-to-date methods, and to these illustrations may be added, as a matter of interest, one that the author had in contemplation for erection which, it is thought, will be self-explanatory; it may, however, be amended in certain particulars before erection. See Figs. 4 and 5.

These low prices can, in many places, be reduced by utilizing cheap local and easily procurable aggregate, certainly if it is in any way considered suitable for ordinary macadam; and in any case, in almost any district in the United Kingdom, sufficient material can be found on the roadside for making the bottom coating, which is 85 per cent of the bulk, and which mixed and laid, at even 60 cents per yard, including the granite surface, is immeasurably cheaper than an imported granite which sometimes costs as much as \$4.85 per ton delivered on to the road, or laid and rolled complete 85 cents, whilst the maintenance economies of tar macadam will be subsequently demonstrated.

POOR MUNICIPAL MANAGEMENT

An incident that might be charged to the inefficiency of municipal superintendence was witnessed the other day in a Western city of 40,000 people. A stretch of macadam road had been graded and rolled preparatory to an experimental treatment with liquid asphalt. At 9 o'clock in the morning one wagon load of the heated asphalt was delivered. A foreman with four men were on hand to properly broom it in. This work required about one-half hour, after which the men sat around. The accompanying picture was taken at 2 o'clock in the afternoon, and the men can be seen grouped together standing on the curb in the distance, where they had been waiting for the second load, which finally came at 2:30. In the meantime the asphalt first laid had got cold, and no screenings were yet on hand to cover it with. A contractor who did business this way would lose money, and it does not appear that cities are exempt from a similar sequence of cause and effect.



LIQUID ASPHALT COOLING ON STREET

LINCOLN PARK ROAD EXPERIMENTS

Graded Macadam—Oils and Emulsions—Chlorides—Asphalt
Grouting—Asphalt Macadam—Last Named
More Satisfactory than Grouting

DURING the past two years there have been conducted at Lincoln Park, Chicago, under the direction of Superintendent M. H. West, a series of experiments in road treatment.

The first experiment tried was that of grading different kinds of rock of various sizes and in different ways, but this proved only partially successful. This was followed by considering the problem of laying the dust, upon the theory that by retaining the fine dust particles on the surface of the street by means of oil, or some other substance, the destruction of the road would be averted. Light oils were tried, but at that time these were not of an odorless nature, such as have more recently appeared on the market, and consequently their use had to be abandoned. After this a plant was erected for the emulsifying of various oils with water. During the year 1908 over 288,000 square yards of road surface were sprinkled with an emulsion consisting of two oils, of paraffin and of asphaltic base respectively, both of which had been deprived of the lighter oils with their disagreeable smell. These oils were mixed in proportions of three to one and made into a 10 per cent emulsion with soap and hot water by being agitated by means of a steam pump connected with a series of vats. The cost of this treatment has averaged about 2½ cents per square yard for the six applications made during the year. In some cases a coat of sand was applied over the emulsion, which tended to form a wearing cushion and thus protect the road metal beneath. This method of treatment produced a thoroughly dustless road which wore uniformly through the summer months and well into the winter. However, during the spring, when the roads were covered with snow and water, the constant softening caused the surface to lose its protective properties, and great damage was done by motors. This method saved considerable money during the summer and fall over the cost of sprinkling with water, but considerable expense was involved by the entire resurfacing which was necessary in the spring.

Calcium and sodium chlorides were given extensive trials, but did not seem to produce results equal to the emulsion treatment, and were abandoned.

Some of the drives were treated with California maltheas applied in different ways. Sections of road treated with 1½ gallons per square yard and costing 35 cents per yard complete withstood two seasons of severe usage in a creditable manner.

Forty-three thousand yards of road surface were treated with Kansas residual oil at a cost of 8.9 cents per square yard. The surface of the road was scarified, regraded and rolled, after having been thoroughly soaked with water. After the road was thoroughly dried out the oil was applied hot and covered with sharp sand or limestone screenings, and was thoroughly rolled. At some points this oil worked up to the surface and caused complaints of stickiness.

About twenty thousand square yards of road prepared as

above was treated with tarvia costing 6 cents per gallon, the finished work costing 14 cents per square yard. Up to the present time but few defects have been noticed in this.

About ten thousand nine hundred yards of roadway were resurfaced with a grout of asphalt filler. In doing this work the surface of the road was thoroughly scarified by means of spiked teeth in a roller and subsequent dragging with a harrow. This was followed by a light rolling which brought the surface of the road to an even condition, but did not pack it hard. On top of the old road, as thus prepared, there was spread a single layer of 2½-inch crushed limestone. This was thoroughly rolled and imbedded in the old road surface. It was then flushed with asphalt having a melting point of about 180° F. The asphalt was applied at a temperature of about 300° by means of spreading cans. Immediately after the application of the asphalt the surface was covered with sharp torpedo sand, which was thoroughly rolled. This worked into the interstices and absorbed a large amount of the asphalt. If an excess of this worked to the top more sand was spread over. This treatment required 1.6 gallons per square yard and the total cost was 76 cents per square yard.



POURING TAROID OVER STONE, LINCOLN PARK

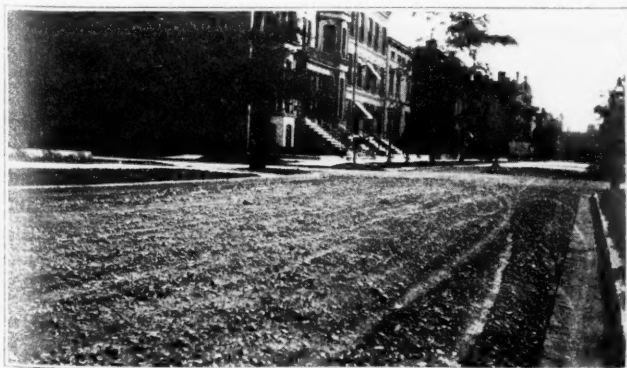
During the present year work of a similar character is being done, except that tarvia and taroid are being used in place of the asphalt. Where this treatment is applied to road surfaces that do not need new stone the cost has been 16 cents per square yard. In some cases where a new surface of 1½-inch stone has been used, the cost has been 37 cents per square yard. Instead of using torpedo sand as a surface covering,



SPREADING CRUSHED SLAG ON HOT TAR

there is this year being tried finely crushed slag. This gives a harder surface, but it has not been in use long enough to demonstrate whether or not there is any advantage in using this over the use of sand.

Seven thousand six hundred square yards were resurfaced with asphaltic macadam. The graded aggregate, consisting of ¾-inch limestone screenings and sand, was heated and mixed in a portable asphalt plant with 10 per cent of the binding material, and spread in a 2-inch layer on the prepared roadbed. The method of doing this work has previously been described in this paper in connection with the work of the South Park Board. In one section of the road crushed slag was used in place of limestone, making an extremely hard material. The



SPIKED SURFACE PREPARED FOR TAR APPLICATION

cost of this pavement completed was 78 cents per square yard.

In the opinion of Mr. West, the pavement made with the mixed material is much more satisfactory than the grouted roadway. This is because of the fact that both the stone and asphalt can be heated to the same temperatures and thoroughly mixed before applying, while in the grouted pavement there is a possibility that the stones are not thoroughly covered with the asphaltic material. The more even and uniform mixture, where the mixing is done in a machine, much more than offsets the saving in cost by the other method. Quoting from Mr. West's report, in regard to this style of pavement he says: "The binding material is of such a nature as to maintain elastic properties between temperatures of 40° below and 160° above zero. The pavement emits no odor and is perfectly noiseless, is not slippery when wet, and seems to have a proper degree of toughness to enable it to withstand the onslaught of motor traffic. Its low cost and superior qualities for park uses seem to give it advantages over bitulithic and sheet asphalt pavements, which in some ways it resembles."

DUST LAYING METHODS

A discussion of the materials and methods used in dust laying was given in a paper before the Franklin Institute by Mr. W. H. Fulweiler entitled, "The Development of Modern Road Surfaces," which is published in the Journal of the Franklin Institute for September. He treats in this paper of the various theories of roads, of wheel wear, automobile suction, etc., and classifies the methods of counteracting the destructive effects into those which treat the road surface to prevent the dust rising; those which incorporate a binding material with the broken stone; those which make a homogeneous solid surface, such as cement, and the use of small blocks of stone or similar hard material. In the materials for the first of these he includes hygroscopic salts, emulsions, oils and tars, all for surface treatment. He states that calcium chloride was experimented with as early as 1828. "Several patented preparations have lately come on the market such as Aconia, a secret compound; Lyminite, a mixture made by fusing Na, Na₂O, NaCl and CaO, and dissolving in water; Panscale, the residue from brine evaporators, and Fitzsimmon's Patent Dust Layer, a sodium silicate. These patented preparations seem to be no more efficient than the calcium chloride, and are considerably more expensive."

Emulsions of oil and tar are designed to obviate several disadvantages from the use of the unemulsified materials, such as the necessity for preparing the road surface, heating the compounds, labor of spreading, and necessity of closing the road to travel during the application. Emulsions were first developed about 1903 and 1904 in France and Germany, and the market was soon flooded with patented preparations, which are in general emulsions of tar or tar oils, asphaltic petroleum, asphalt or, in some cases, of waste oily products made with soda or ammonia, and are expected to be diluted with water and applied to a road surface without previous treatment from an ordinary sprinkling cart. The author gives the following list of the more important of these emulsions:

List of Emulsions

- APOKONIA. Product of heating heavy residual oil with phenols.
- APULVITE. Powdered asphalt with emulsifier.
- BASILITE.
- BOUHAROL PROCESS. Coal tar and soap.
- COOK'S EMULSION. This is a general process of emulsifying asphaltic base oils with a soap solution. A formula which is widely used is as follows: 8 bbls. of asphalt base oil, emulsified with 18 pounds cotton-seed oil soap; made up to 600 gals. Mixed for use with three parts of water.
- CREMPOID R. Glue, bichromate of potash, oil, tar.
- CREMPOID D. Glue, bichromate of potash, oil, no tar.
- DUSTABATO SYSTEM.
- DUSTOLINE. Thin yellow oil, no body.
- DUSTROYD. Wool grease emulsified.
- ERMENITE. Cotton-seed oil treated with H₂SO₄ at an elevated temperature, washed, mixed with 4 parts by weight of tar, emulsified with hot NaOH, diluted with water to contain 20 per cent of tar. For use this stock solution is diluted with 4 parts of water.
- EMULSIFIX. Tar mechanically emulsified with water.
- HAHNITE. Carbolic acid and oil emulsifying tar and asphalt at 150° F.
- INJECTOLINE. A non-freezing oil.
- ODOCREOL. A tar oil.
- NEWSTRANS.
- POSSIDERITE.
- POSSIFIEROL.

PULVICIDE. 50 gal. creosote oil, 112 pounds pitch, 252 pounds resin, melted and mixed with solution of 28 pounds NaOH in 18 gal. of water. Diluted with ten times its bulk of water for sprinkling. Lasts about ten days.

PULVIVORE. Shale oil from Autun, France.

PULVERENTO. Tar oil, mineral oil, carbolic acid, emulsified with ammonia.

RAPIDITE. Powdered asphalt mixed with emulsifier.

RIPLEY'S COMP.

SANDSIZE. Grease from wool scouring emulsified with potash, patented U. S. 813,389, Feb. 20, '06.

SIMPLICITE. Costs 4 c. a pound.

SULPHITE PITCH. This is a by-product in the manufacture of sulphite cellulose. It is soluble *per se*, in water and is said to have given very good results. This appears to be the most satisfactory article yet proposed for use with water.

TERRACOLIA. Ammonia emulsion of oil with coal tar.

WESTRUMITE. Emulsion of tar and mineral oil with ammonia.

ZIBELLITE. Costs 2.5 c. a pound.

"The alkalis used in forming the emulsion destroy, to some extent, the binding power of the oils used, and, furthermore, in many of the preparations the oils are not properly suited to the work in hand. They do lay the dust if applied in sufficient quantity, but they have little, if any, permanent binding effect on the road surface. They are almost entirely removed by a heavy rain, as through their application with water they cannot penetrate below the surface of the road."

Surface dressing with oils was, Mr. Fulweiler says, first tried in 1804 in Santa Barbara, Cal., and in 1898 was again tried in Los Angeles and San Bernardino. In 1899 a Texas asphalt oil was used successfully in Ft. Worth, and was tried in the Boston parks, but abandoned on account of odor. In 1901 a paraffin base oil was used on a railroad bed on Long Island. In 1902 the same class of oil was used by the Pennsylvania Railroad, and in 1903 the same was used unsuccessfully at the Rock Island arsenal. In 1902 Texas asphalt oil was used successfully on the shell roads of Galveston. In 1904-05 experiments using Kentucky and Texas asphalt oils made in Kentucky, and elsewhere by the government, proved successful.

These experiments demonstrated, in Mr. Fulweiler's opinion, that paraffin base oils are worse than useless, as they serve as a lubricant between the stones and hasten the destruction of the road. Moreover, they tend even more than the asphalt oils to form a black, slimy mud under the action of frost, traffic and excess moisture. In applying oil he finds that on eastern macadam roads it is necessary to sweep off the dust before applying the oil, which can be done sufficiently well with a horse sweeper. While the oil can be used cold, for general use, in the East especially, with the heavier oils, the heated oil can be more easily and economically handled and applied than cold oil and seems to give slightly better results. Some brooming of the oil is necessary, the amount depending upon the way the road surface absorbs it. Sanding he believes to be exceedingly important, as the value of many oils seems to lie chiefly in the formation of a hard coating of oil-saturated sand, which fills all the surface voids and presents a smooth, resilient surface to the traffic. The sand should be applied until the oil fails to come to the surface, a slight excess even being desirable in the opinion of a number of engineers, particularly about Boston. An excess of oil is very undesirable, as it requires too much sand to prevent it damaging traffic, and if too thick this sanded skin peels and leaves a very poor surface. The usual practice seems to be from .2 to .3 gallons per square yard on macadam, .3 to .4 gallons on gravel, and .4 to .7 gallons on earth roads.

We believe that this matter of giving too much oil is one of the most common causes of partial failure or nuisance occasioned in the oiling of roads, and also in the incorporation of bitumens with the road metal.

WATER WORKS DATA

In behalf of the New England Water Works Association Mr. F. W. Dean, of Boston, Mass., is investigating the matters relating to the purchase by municipalities of privately owned water works. To further this investigation Mr. Dean has prepared a very complete data sheet which includes all items relating to the source of supply, the water system, including pumping stations, piping, etc., the water consumption, and the financial end, such as cost of operation, taxes, income, securities, debt, etc. This data sheet may be obtained by writing to Mr. Dean at 53 State Street.

ERIE, PA., WATER WORKS REPORT.

THE report of the Commissioners of Water Works of Erie, Pa., for the year 1908, contains an unusually good statement of the finances of the department, both in detail and also in an exceedingly clear summary which is easily understood by any intelligent taxpayer. A statement is given of the account between the Water Works Commissioners and the city of Erie, which kind of information is seldom given in reports of municipal water departments. This shows that the Water Commissioners paid to the Sinking Fund Commissioners during the year, \$20,000. The water furnished for the City Hall was valued at \$280.30, to the engine houses \$252.51, to 840 fire hydrants, \$40 each, making \$33,600; besides which there are itemized the amounts due for sprinkler hydrants, fountains, flushing sewers, municipal hospital, five parks, sprinkling two streets (special), together with material for the Engineering Department and for a park fountain, \$17.42. Adding interest on balances of \$2,701.26, the total amounted to \$59,942.82. At the beginning of the year 1908 there was due the city (presumably for money furnished for construction), \$370,662.73, and during the year there was added interest on quarterly balances of \$13,836 and office rent, \$1,200—a total of \$385,698.73. This shows a balance still due the city on Jan. 1 of this year of \$325,755.91. The estimated value of the plant is about \$2,440,000.

The Water Commissioners maintained a swimming pool and twenty-one drinking fountains for the general benefit of the public. The swimming pool was built on land reclaimed along

the harbor near the pumping station in the early part of 1902. The interior of the pool covers a space 75 feet wide by 155 feet long. The depth of water ranges from 1 foot 6 inches to 6 feet 9 inches. The pool is lined with Portland cement. It is supplied with water from a 4-inch water main. On the west side of the pool are 34 cabinets, each $3\frac{1}{2}$ by 5 feet, and also an attendant's room 15 feet by 5 feet. The drinking fountains are all of cast-iron, manufactured by the J. L. Mott Iron Works, and four styles are used. One fountain has a square base, ornamented top with square sides, and three places for man and one for horses. Eleven have square base, oval sides, with plain top, one place for man, one for horses and two for dogs. One has a flat base with oval sides and plain top, with one place for man. The remaining eight are cast-iron water pipe 20 inches in diameter and 7 feet long, standing $4\frac{1}{2}$ feet above the ground. These last run all winter without freezing.

REPORT ON BRONX AND PASSAIC SEWERS.

IN connection with the suit now pending in the U. S. Supreme Court by which New York wishes to prevent the discharge into New York Bay or its immediate tributaries of all sewage from the proposed Passaic Valley and Bronx Valley sewers, Colonel W. N. Black, Chief Engineer U. S. A., Department of the East, has prepared a report, making certain recommendations.

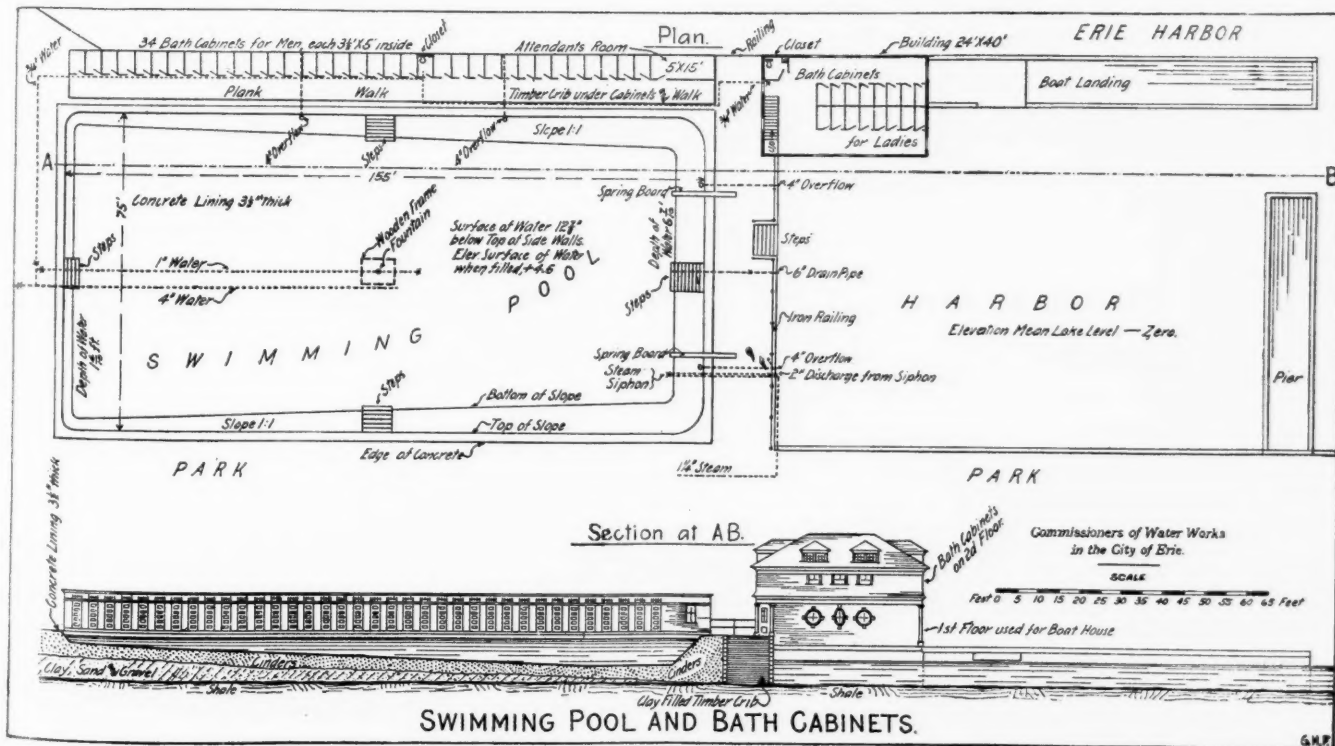
Col. Black states that at present practically all the sewage matter to be conveyed by these sewers reaches the harbor directly or enters streams which discharge into the harbor. As to deposits in the harbor, he believes that those caused by the Bronx Valley sewer would be inconsiderable; and the discharging of the Passaic Valley sewer into the harbor instead of into the Passaic river as at present would not increase the cost to the government for dredging.

As to the creation of a nuisance, he believes that this would be almost certain to occur if the untreated sewage be concentrated by being discharged at one point; although, if it could be diffused by discharge through many widely separated outlets, this probably would not be the case, since the total volume of water in the river and bay are sufficient to afford adequate dilution.

He therefore recommends that there be required in connection with the Bronx Valley sewer the construction of a sedimentation tank 200 by 125 feet by 40 feet deep, holding one day's flow; the effluent from this to be aerated by forcing air into it in the outlet pipes; which latter should have numerous outlets distributed over a comparatively large area.



GENERAL VIEW OF SWIMMING POOL.



CONCRETE HIGHWAY CULVERTS

Instructions for Designing and Constructing Culverts of Plain and Reinforced Concrete, of all Spans—Plans, Quantities and Costs

SOME excellent pamphlets, which are practically text-books, have been issued by manufacturers of several kinds of structural materials. As they have every object in seeing that the best results are obtained in the use of their materials it is natural that only reliable methods would be advocated by them, allowance, of course, being made for the advertising of their own special goods. One of such pamphlets has recently been issued by the Atlas Portland Cement Co., entitled "Concrete in Highway Construction," dealing with paving, culverts, bridges, retaining walls, etc. The following description of methods of culvert construction is taken from this pamphlet, as containing information useful for highway superintendents and town engineers:

Culverts with square or rectangular openings are called box culverts, and those with circular sections are called pipe or circular culverts. Pipe culverts are made entirely of concrete or else of tile or iron pipe with a concrete head wall at each end of the pipe where it projects from the sides of the road.

BOX CULVERTS

Box culverts may have square or rectangular sections, or the top half may have the form of half an octagon. For small

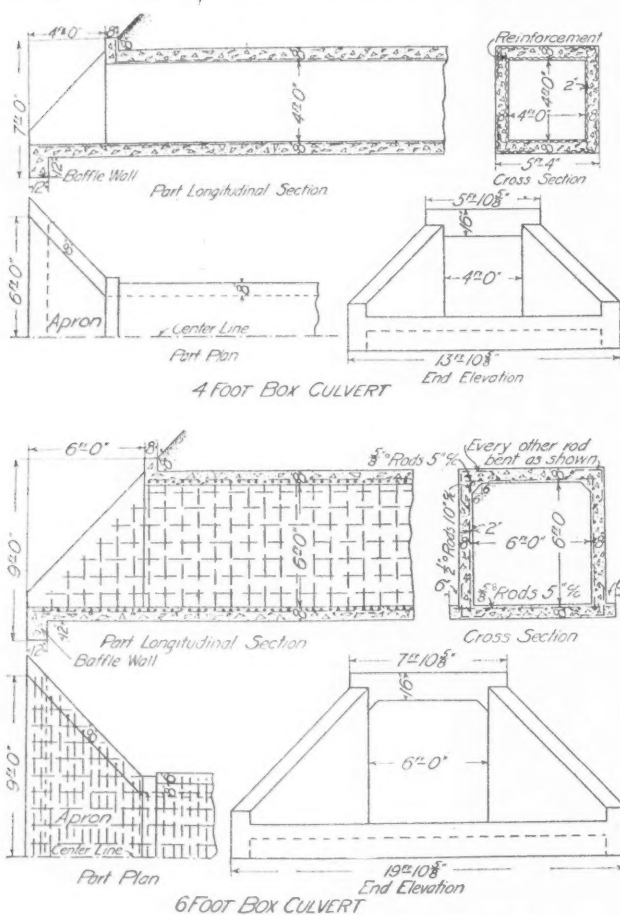


FIG. 1.—REINFORCED CONCRETE BOX CULVERTS

culverts, the last is a neat design, having an arch effect and yet being cheaply and easily constructed.

Fig. 1 shows a good design for a 4-foot box culvert of ample strength to carry a highway. To prevent undermining, a concrete invert or bottom is used and a baffle wall and apron at each end should be constructed, as shown, although some culverts where the soil is hard do not need the apron, baffle wall or bottom. Cobble stones or paving bricks may be used instead of concrete for covering the bottom between the side walls. They may be laid even in running water, and in case a dry

season should occur later the spaces between the stones or bricks may be filled with cement grout. Concrete must not be laid in running water, for the cement will be washed out from the aggregate. This 4-foot box culvert has top, bottom and sides 8 inches in thickness and is reinforced with expanded metal No. 10 gage having 3-inch meshes, or with other similar reinforcement placed not less than $1\frac{1}{2}$ and not more than 2 inches from the inner surface of the culvert. The sheet reinforcement should also be placed in the apron and in the wing walls.

The lower part of the illustration shows a design for a box culvert with opening 6 by 6 feet, similar to the 4-foot box culvert above described except that round steel rods are used instead of sheet reinforcement. In the bottom of the culvert proper the rods running at right angles to the length of the culvert should be $\frac{5}{8}$ inch in diameter and spaced 5 inches apart. For the top they should be $\frac{5}{8}$ inch in diameter, spaced 5 inches apart and alternate rods should be bent, as shown, to reinforce the side walls extending within 3 inches of the bottom surface of the concrete. This bending of the alternate rods in the top results in the vertical rods of the sides being spaced 10 inches apart. In the apron the $\frac{5}{8}$ -inch rods should be spaced 5 inches apart and should be bent up alternately so that the vertical rods in the wing walls are spaced 10 inches.

In addition to the rods above mentioned there should be a set of $\frac{1}{2}$ -inch diameter rods running parallel to the length of the culvert spaced 10 inches apart which should extend into the apron and wing walls at each end.

Fig. 2 and Fig. 3 show a reinforced box culvert built in Lenox, Massachusetts, in 1896, for the Massachusetts Highway Commission. The body of the culvert is reinforced with $\frac{7}{8}$ -inch square twisted steel rods 8 inches c. to c. at each corner where the side walls meet the top and bottom, those at the bottom corners being 24 inches long and bent, while those at the top corners are straight and 14 inches in length. Four counterforts for bracing the side walls, shown in the plan and also in section C-C, are used in this culvert.

Forty cubic yards of broken stone, 16 cubic yards of sand, 55 barrels of cement, and 778 pounds of steel were used. One hundred twenty-one cubic yards of earth were excavated. The concrete mixture was about one part Portland cement, two and one-half parts sand, and five parts crushed stone, and the 44 cubic yards in the structure cost \$660, or \$15 per cubic yard. The earth excavation cost 75 cents per cubic yard. The total cost of the culvert to the Commission, exclusive of the macadam roadway, was \$809.67. The cement cost the contractor \$1.85

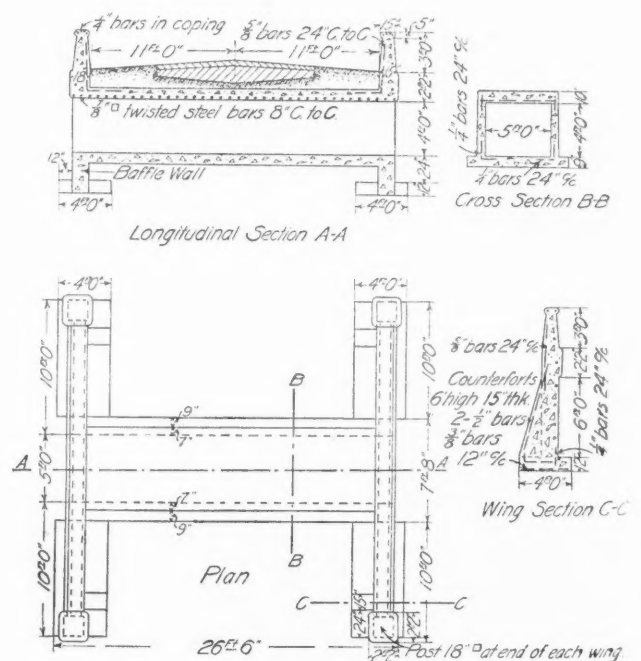


FIG. 3.—REINFORCED CONCRETE BOX CULVERT AT LENOX, MASS.

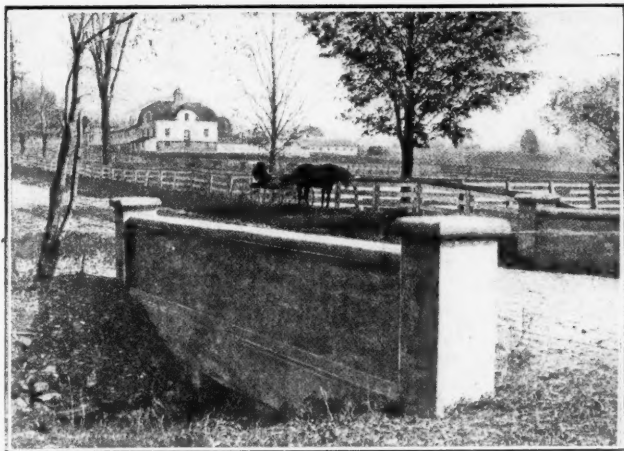


FIG. 2.—REINFORCED CONCRETE BOX CULVERT AT LENOX, MASS.

per barrel, plus 50 cents for hauling, making the price at the culvert \$2.35 per barrel. The contractor paid \$2 per load of about 1 cubic yard for the sand delivered at the culvert and about \$1.15 per cubic yard for the stone. About $3\frac{1}{2}$ or 4 days were required for excavating, and the concreting extended over 24 days, including delays.

Another type of small culvert and form as used by the Iowa State Highway Commission is shown in Fig. 4.

CIRCULAR OR PIPE CULVERTS

Circular or pipe culverts are made of concrete, as in Fig. 5, or of metal with concrete head walls. The concrete culvert shown is 3 feet in diameter and is not reinforced. An apron, with a baffle wall on each side as well as on the outer end, is provided to prevent the water from running along the outside of the culvert and thus washing out the earth.

Pipe culverts are made of cast iron or sheet iron or of tiles. They should have fall enough so that water will not stand in them, a slope of $\frac{1}{4}$ inch per foot being generally sufficient. They should also have at least 12 to 18 inches of earth over the top of the pipe and the earth should be thoroughly compacted around the outside of the pipe.

To prevent undermining, head walls should always be used with pipe culverts.

ARCH CULVERTS

As previously stated, arch culverts are more expensive and more difficult to build than box culverts, but nevertheless they are frequently used where an artistic design is desirable. The culvert of 5-foot span, illustrated in Fig. 6, was built in Bureau County, Illinois, by the Illinois Gravel Company of Princeton, Illinois. It contains 11.4 cubic yards of concrete mixed one part Portland cement to six parts sand and gravel, using gravel as the large aggregate with coarse sand to fill the voids. The cost of the cement delivered at the bridge was \$1.35 per barrel. Actual cost of the culvert was \$75, which included long haul charges for gravel.

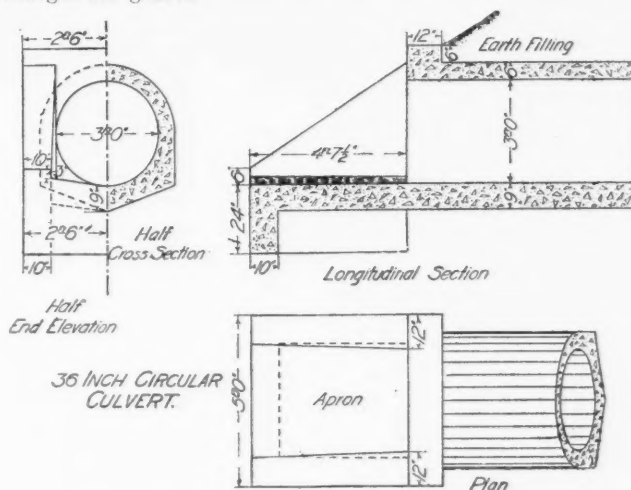
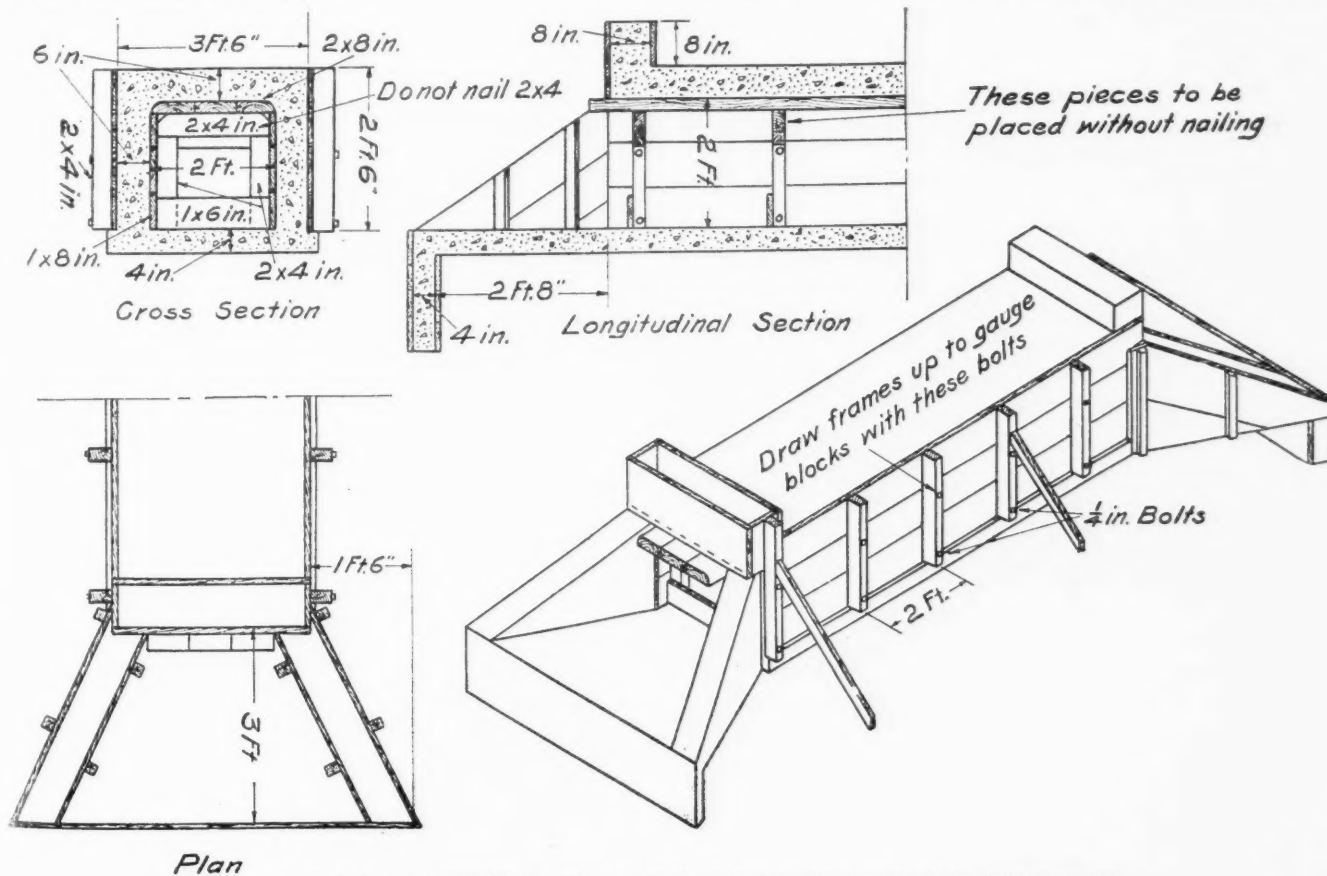


FIG. 5.—CONCRETE CIRCULAR CULVERT

Fig. 7 shows design for arch culverts of 8 feet clean span, suitable for highway construction where the soil is firm, as compact sand or hard clay. If the soil is soft clay or loam, the footings should be made wider so as to give a larger bearing area for the walls as well as for the arch proper. Of course if the soil is too soft box instead of arch culverts should prefer-



Plan

FIG. 4. SMALL BOX CULVERT AND FORMS, IOWA STATE HIGHWAY COMMISSION



FIG. 6.—CONCRETE ARCH CULVERT, BUREAU CO., ILL.

ably be used, or else the bearing power of the soil should be increased as indicated below under "Preparing the Bed."

The design shows width of 10 feet between the walls, but this can be increased to any distance desired.

Quantity of Material for Arch Culverts

Proportions: 1 part Portland cement to 2½ parts sand to 5 parts gravel or stone.

MATERIALS FOR CULVERT FOR 10-FT. ROAD-WAY				EXTRA MATERIAL FOR EACH ADDITIONAL FT. WIDTH OF ROAD		
Span of Culvert	Cement	Sand	Screened Gravel or Stone	Cement	Sand	Screened Gravel or Stone
5	50 bags or 12½ bbls.	120	240	2 bags or ½ bbl.	5	10
8	80 " " 20 "	190	380	3 " " ¾ "	7½	15
10	115 " " 28½ "	275	550	4 " " 1 "	10	20

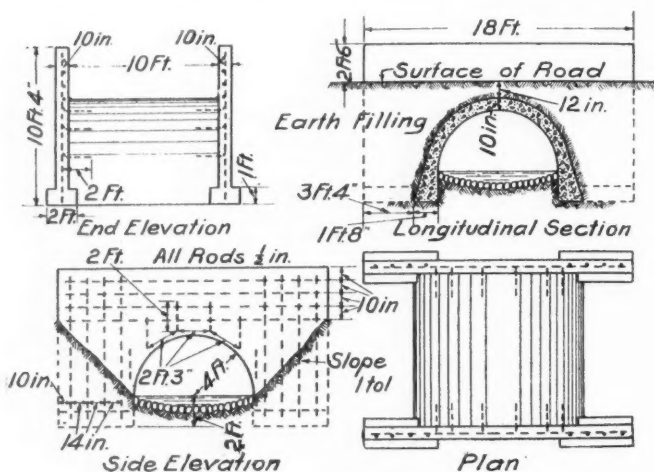


FIG. 7.—ARCH CULVERT FOR EIGHT-FOOT SPAN

PREPARING THE BED

Culverts should be built when the water is low in the brook at the site of the culvert. In many cases the water will cause no trouble if, in excavating for the foundation, the earth is thrown up into two parallel dams so that the brook can flow between them, the foundation for the culvert being then laid outside of these piles of earth. Sometimes the stream can be carried in a new trench around the side. If there is considerable water in the brook and it cannot be carried around, it may be necessary before excavating to drive a row of closely fitting boards parallel to the stream in front of each of the proposed trenches in which the foundations are to be laid, and then bank the earth against the boards to make two tight dams between which the brook flows and behind which the work may be carried on. Sometimes the water may be carried in a box trough.

In some cases a hand pump may be needed to keep down the water in trenches. Trenches for foundations of whatever kind should in all cases be excavated to a depth below frost, but if

the brook is never dry, two or three feet below the bed of the stream will be sufficient.

The preparation of the bottom of the trenches to receive the concrete footings of the culvert as a rule should not be difficult, for the concrete can be laid directly on the soil when it is hard clay, compact sand or gravel. If the soil is soft sand or soft clay or loam it should be compacted by ramming, but if too soft to be rammed the bearing power of the soil can be increased by adding a layer of clean sand, cinders, or broken stone before ramming. In extreme cases, where the soil is very soft, it may be necessary to increase the width of the base of the culvert walls or to build these walls on a layer of 4-inch planks to distribute the weight over a considerable area of the soil.

Occasionally, piles may be necessary. Where the soil is as soft as here indicated a box culvert is preferable to an arch.

Planking should never be used under a foundation unless it will at all times be covered with water.

FORMS FOR ARCH CULVERTS

The forms are set after the soil has been prepared to receive the concrete. Outer wing wall forms are generally constructed of 1-inch boards laid horizontally and braced with 2 by 4-inch studs. The forms on the inner side of the wing are laid horizontally and cut to fit approximately the shape of the arch. The outer surface of the arch proper needs forms from the bottom up to about one-half to three-fourths of the way to the top, which should be made of 1 by 4-inch or 1 by 6-inch boards, attached at their ends to the inside wing wall forms.

Centering for circular culverts is shown in Fig. 8. The sills should be set first and braced; then the circular forms, spaced 2 feet apart for 1-inch lagging, 3 to 4 feet apart for 2-inch stuff, should be set upon the wedges resting on the upper sills. The lagging shown in the drawing, which should be of narrow width to fit the circle, is then fastened to the circular centers. The outer forms must be braced by tying across the top of the culvert or by using braces against the earth on either side.

In another plan the inside wall forms have a 3 by 4-inch or a 4 by 4-inch ranger set across the top of the cleats on which the wedges are placed to support the arch forms. The wedges should separate the two forms at least 3 inches in order to facilitate the removing of the arch forms. A strip of sheet iron may be nailed to the side forms and lap over on to the arch form to prevent the concrete from getting in between the forms. After removing the arch forms the side forms can be readily removed.

The forms should be oiled before placing the concrete.

The concrete for culverts should be of a mushy consistency and should be deposited and lightly tamped in layers 6 or 8 inches thick. If possible the concrete of the whole arch and wing walls should be deposited at one time, but where the work is so large as to make it impossible to do this, the arch should be divided into circular sections, and one section laid at a time. Twenty-eight days should be allowed for the concrete to set, after which time the wedges are knocked out and the centers removed. The earth filling can be placed as soon as the connecting is completed.

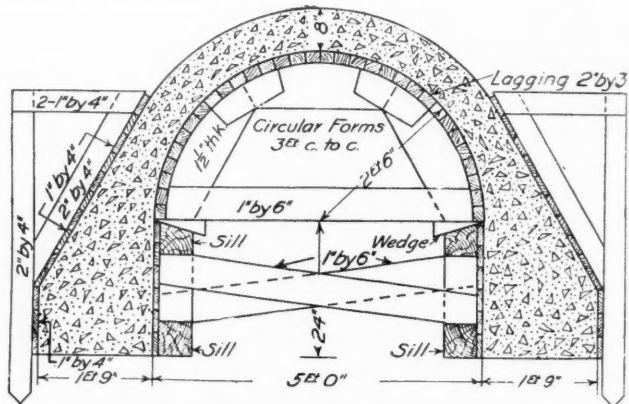


FIG. 8.—FORMS FOR FIVE-FOOT CIRCULAR ARCH

MUNICIPAL JOURNAL AND ENGINEER

Published Every Wednesday by Swetland Publishing Company
THIRTY-NINTH STREET BUILDING
231-241 West Thirty-ninth Street, New York

A. PRESCOTT FOLWELL, Editor
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SUBSCRIPTION RATES

United States and possessions, Mexico, Cuba.....\$3.00 per year
All other countries..... 4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office at New York, N. Y., under the Act of Congress of March 3, 1879.

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It is further requested that our Subscription Department be notified if copies are not received promptly.

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It is also desired that the facilities furnished by the reference library in this office should be widely known and freely used by those interested in municipal affairs. Visitors will be welcomed and provided with conveniences for search, and inquiries by mail will be promptly dealt with.

SEPTEMBER 22, 1909

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Data on Road Surface Treatment Needed

It is only about five years since anything other than occasional sporadic attempts have been made at treating road surfaces with asphaltic substances. As stated on another page, certain crude attempts at this were made in California in 1894 and again in 1898. California asphaltic oils were used in these cases; and following this, Texas oils with asphalt base were tried on several roads in that State and vicinity. As late as 1903, paraffin base oils were experimented with in the East in the hope that these, which could be obtained at so much less cost for freight, would be as successful as the Western asphaltic base oils. But anything like scientific experiments or technical information is confined to the last four or five years. During this time the mileage of oiled roads in the East has increased enormously, and likewise there have been brought forward all sorts of processes and materials for such surface

treatment, many with more or less fanciful names, most of which probably have considerable value under appropriate conditions. Apparently, however, the next few years must be devoted to trying out these various materials and methods, since in many cases even their promoters are uninformed by experience as to their value, their claims being based upon theoretical considerations only.

In the rush for improved roads which is made compulsory by the rapid increase in automatic traffic, and in this rapid development of materials to be used for that purpose, it is inevitable that there will be many disappointments. The great need now is for careful, systematic work in studying conditions and results and thus hastening, as much as possible, the survival of the fittest and the rejection of the unsuitable. Fortunately, both the Federal government and several of the State governments have taken a hand in this and are conducting experiments in all climates and under many conditions of soil and with the use of practically all the materials available. The data are rapidly accumulating and some conclusions seem to be already pretty well established. Excepting the experiments carried on by the United States Agricultural Department, most of the tests are made under more or less local conditions, and it cannot be expected that all will agree in their conclusions. It is to be hoped that the last named, which is presumably entirely free from prejudice, either local or commercial, will analyze and compare all the data available and present to the public at large general conclusions which may be accepted as authoritative.

Street Lighting in European Cities

MEMBERS of the Street Committee of the Corporation of London last March visited a number of European cities to study their lighting systems and have issued a report giving the essential facts learned by their visit.

In Brussels the main thoroughfares, squares and market places are lighted by electric arc lamps with an ordinary incandescent gas burner on each side, the arc lamps being turned off at midnight. The side streets are lighted with incandescent gas lamps.

In Cologne and Dusseldorf important streets of the city are lighted by centrally hung electric arc and flame lamps, with lowering gear; the open spaces by a combination of electricity and gas, and the minor streets mainly by incandescent gas lamps upon standards.

In Berlin the general lighting is by means of electric arc lamps, both centrally hung and upon standards; electric glow lamps, and high pressure incandescent gas lamps with inverted mantles. This city has decided to spend about \$1,000,000 in installing the latest pattern of high pressure gas lamps with inverted burners in lieu of the existing gas and electric lamps. At junctions of main thoroughfares lamps of 4,000 c.p. are used; in the main thoroughfares themselves 2,000 c.p. lamps, and in other streets lamps of 1,000, 600, 400 and 200 c.p., the two latter being on low pressure lines.

In Dresden electric arc lamps of the open and flame type were used, a considerable number being suspended across the center of the streets with side lowering gear. Side streets are lighted with low pressure incandescent gas lamps. Electric arc lamps are switched off at midnight.

In Vienna electric arc lamps on standards are used, with incandescent gas lamps fixed upon brackets below; also low pressure incandescent gas lamps fitted with upright and inverted mantles. In Munich electric arc lamps are used, both centrally hung and upon standards; also electric glow lamps and low pressure incandescent gas lamps. In Paris electric arc lamps and low pressure incandescent gas lamps are used, the electric lamps being upon standards.

The Committee have concluded from their investigation that for London centrally hung lamps with lowering gear are advisable on streets, while those upon standards should be used in open spaces; that where gas is obtainable high pressure incandescent gas lamps with inverted burners should be used; elsewhere, electricity with open arc and flame arc lamps.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

ROADS AND PAVEMENTS

Annual Inspection of Streets

Johnstown, Pa.—In accordance with an annual custom, the Highways Committees of both branches of Councils recently made an inspection of the streets of the city. Five large automobiles were used to carry the officials.

Death Trap in Road to Be Removed

Lynn, Mass.—The so-called "automobile death trap" in West-rn avenue on the road between Salem and Lynn is to be removed. The danger point is indicated by the jagged



Courtesy Lynn Item

AUTOMOBILE DEATH TRAP

remnant of ledge rock and gravel with the saplings on top. As one approaches from either side the view is completely blocked.

Stricter Specifications for Granite Block

Newark, N. J.—The specifications for cutting granite block for street paving purposes, which were drawn up by Chief Engineer M. R. Sherrerd early in the year, and which have since caused something of a revolution in that method of street paving, were taken up for reconsideration by the Finance Committee of the Board of Works, and finally adopted for this city. Since the specifications were first made a part of all pacts for granite block pavements, the contractors have been unable to secure a block that would meet the requirements and in consequence none has been laid this year. A slight change in the specifications was suggested by Mr. Sherrerd, but the committee decided that better results could be attained by exercising discrimination in rejecting blocks than by reducing the requirements. The matter was brought up before the committee as a result of a recent visit made by James C. Hallock, assistant to Mr. Sherrerd, and William A. Howell, Engineer of the Street Department, to the granite quarries in Maine. Mr. Sherrerd had specified that all granite blocks should present such an even surface that with the application of a "straight-edge" they should show a depression of not more than three-sixteenths of an inch. Both Mr. Hallock and Mr. Howell learned from their observation at the quarries that this was impracticable at the present time, and that the stonecutters would have to be educated to the new manner of handling the blocks before the specifications in this particular could be complied with. Mr. Sherrerd therefore suggested that a leeway of one-quarter of an inch be given instead. It was explained that this city was the first to insist upon the quarrying of granite block with such a smooth surface by splitting the stone along its natural grain rather than by use of the chisel, and that the granite quarries were experiencing no little difficulty in meeting the requirements. Under the circumstances, it was stated, an increase in the price of granite blocks was to be expected. It was further announced that the quarrymen welcomed the change, and that the increased cost would not be permanent. On three streets in this city the block has been piled up on the curb, while the contractors have awaited the action of the engineering department. Mr. Sherrerd stated that about forty per cent of these blocks would be rejected. On three other contracts that were held up Mr. Sherrerd would not permit the block to be delivered.

Protest Over Award for Paving Ocean Boulevard

Atlantic City, N. J.—Litigation will follow the award by the Board of Freeholders, Atlantic County, N. J., for the paving with amiesite of a section of the Ocean Boulevard to Bryan Reilly for \$196,602. The traction company which is under an agreement to pay one-third of the paving cost will contest the award on the ground that it was informal in several particulars. B. F. Sweetson, whose lower bid was thrown out as not being in conformity to the specifications, says he too will contest the award. Prospect of a prolonged fight in the courts is disappointing to residents, as it was thought this would be the first paved section of the boulevard from Long Branch to Cape May advocated by Governor Fort.

Street Work on Civil Service

Oakland, Cal.—Under the authorization of the Board of Public Works which passed a resolution appointing the employees of the Street Department, City Superintendent of Streets Howe has put into effect the ordinance recently passed by the City Council reorganizing the department. The appointments are to be under a plan closely following the civil service system. There are a limited number and they are to hold their positions during the pleasure of the Board. The superintendent is to file a report and bring what charges of incompetency or dereliction in duty he may have before any employee is discharged. In reorganizing the department it is Superintendent Howe's intention to establish a permanent street repair and cleaning force. The men are to be under a deputy and are to work throughout the year in all parts of the city. There is also to be a permanent sewer gang and street sprinkling force and it is believed that by keeping the men constantly employed and transferring them from one force to another as the occasion demands greater efficiency at a much less expense than heretofore will be reached.

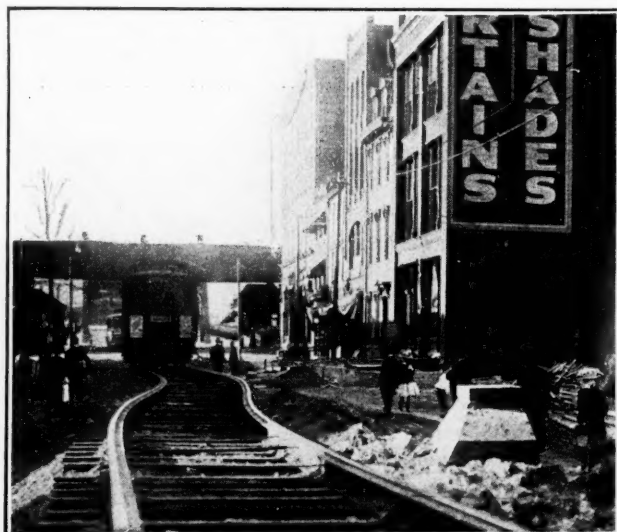
Inducement for Low Bids

Jacksonville, Fla.—Before opening bids for some paving, the Board of County Commissioners passed the following resolution:

Resolved, That if the bids for brick paving which will be opened this day are found to be reasonable in the opinion of the Board, that the Board will contract for more paving than is called for by the advertisement.

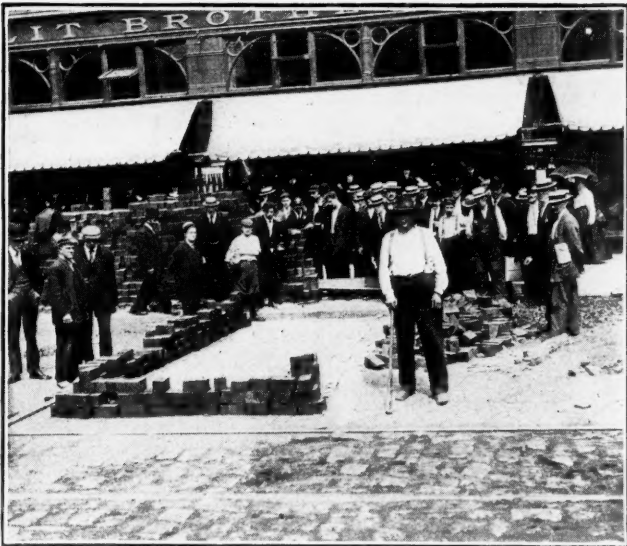
Raising Street Above Flood Level

Pittsburg, Pa.—The reproduction shows the work of grade raising on Ninth street. Mayor Magee had the work done to show downtown realty owners just what benefits they can derive from elevating streets above flood level. Property owners raised claims for damages and the city paid for the construction.



Courtesy Pittsburg Dispatch

RAISING STREET GRADE ABOVE FLOOD LEVEL



Courtesy Philadelphia Record

FIRST WOOD BLOCK PAVING, MARKET STREET

First Wood Blocks Laid on Market Street

Philadelphia, Pa.—The real work of paving Market street with wood blocks is now on in earnest. The thoroughfare is being torn to an almost impassable condition to other than pedestrian traffic. Gangs are busy at a dozen different places grading and laying concrete. The illustration shows the first day's work of block laying, only a few yards, the work being slow to give the concrete gangs a chance to get ahead.

Standard Oil Demonstrates Street Oiling

New Iberia, La.—The Standard Oil Company has consented to make a demonstration in oiling streets by an offer to apply oil to three squares of the city's streets at its own expense, the city paying for the oil at 7½ cents per gallon. The Mayor has accepted the proposition and the demonstration will be made within the next ten days. Mayor Power has had three blocks of Main street prepared for the oil, and it will be an object lesson to the citizens as to the utility of the use of oil for the purpose. Similar offers have been made to Lafayette and Broussard. The oil will be brought in a 6,000-gallon tank car and the company's own sprinkler and team and operator will apply the oil.



BEFORE IMPROVING STREET, POLICE HEADQUARTERS, MORRISTOWN, N. J.

Tar Mixture For Hillside Streets

Duluth, Minn.—City Engineer McGilvray has decided to spread a tar mixture on the hillside streets where macadam and gravel have been laid. These streets have always been a great source of trouble and expense on account of the washing out during storms. The tar will be used together with a two-inch layer of fine crushed stone.

Pensacola to Oil Roads

Pensacola, Fla.—A test of using oil on streets is to be made by the Board of Public Works, and if it proves satisfactory a large quantity will be ordered and used on many of the streets. A quantity has been ordered and is expected here in a few days, when it will be placed on North Palafox street, where the roadbed has been constructed of cinders. It is the belief of the Street Superintendent, as well as the City Engineer, that oil placed upon streets of this material will prove highly satisfactory, and if it does, it will solve a long-felt need in this city.

Experimental Road Work at Utica

Utica, N. Y.—The Barber Asphalt Company has begun the work of improving one mile of the Utica-Paris road south from Utica, so that it will not be affected by rapidly passing automobiles, which at present lift and scatter whatever loose material there may be on the surface. The work consists of excavating the wearing surface to the depth of three inches and then filling in with three inches of binder coat. This binder coat is made of broken stone, the largest of which must pass through a ring an inch and a half in diameter. These stones are coated with asphalt and this mixture is placed on the surface heated. It is then rolled until it becomes compact. The top becomes smooth and impervious to water.

Do Not Want New Paving Materials

Bayonne, N. J.—At a recent letting for a large amount of asphalt paving a bid from James J. Coogan for Texas asphalt at \$1.49 per square yard was rejected on the ground that no pavement had been shown to have been laid with Texas asphalt that had been in use for five years, as required by the specifications. Mr. Coogan has published a letter in which he says that if Texas asphalt as laid in Brooklyn looked as bad as some standard asphalts laid in Bayonne he would not have the courage to defend his bid. However, Mayor Garven is firm in his determination to use only such asphalts as have been laid for at least five years.

Improvements at Morristown

Morristown, N. J.—Under the direction of Howard J. Cole, Commissioner of the Department of Streets and Sewers, Morristown is gradually improving, old methods are being eliminated and new ones installed. The photographic reproductions show the before and after conditions at police headquarters on Speedwell avenue.



AFTER IMPROVING STREET—POLICE HEADQUARTERS, MORRISTOWN

SEWERAGE AND SANITATION

Barge Canal and Sewage Disposal

Albany, N. Y.—The State Department of Public Works has asked Attorney General O'Malley for an opinion as to whether municipalities which use for the drainage of their sewage those portions of the Hudson, Mohawk and other streams which are to be canalized have a legal right to use any portion of the new barge canal for sewage disposal and whether the State will have control over these waters, notwithstanding the present use for drainage purposes. If the decision is against the various municipalities it would result in an enormous expense to change their systems.

Baltimore May Fight Rats

Baltimore, Md.—An ordinance will be introduced in City Council shortly, providing that all garbage must be placed in tin cans with tight-fitting covers, and that material which might be food for rats must not be placed within their reach. It will be the first official step toward the destruction of the rodents. The ordinance will be introduced by City Councilman Binswanger, who for some time has been interested in the fight, and is convinced that for economic and sanitary reasons the rodents should be fought by the municipality. The ordinance will be modeled closely after the lines of the San Francisco ordinance, which was passed during the bubonic plague there, when it was declared by scientists that the plague was carried mostly by fleas which existed on rats.

To Enforce Health Laws

Bayonne, N. J.—The Bayonne Board of Health intends to continue its campaign for better sanitary conditions in regard to the sale of the perishable foods consumed in the city, according to Assistant Health Physician Dr. C. J. Larkey, who stated that at the next meeting of the Board that body would take up the matter of enforcing the State laws passed at the last session of the Legislature which places certain restrictions about the sale of vegetables, fish and meats. Such enforcement would put many of the peddlers' wagons out of business because they would not comply with the conditions.

New Method of Preventing Diphtheria

Boston, Mass.—Arrangements have been completed by the Board of Health for an experiment on the school children of Brighton. It is the intention of the Board of Health to examine every child in the public and parochial schools of Brighton during a period of three days, and to repeat the examination a week later. The Board will take cultures from the throat of each school child in an effort to locate and stamp out every case of diphtheria that may be about to appear among the Brighton school children.

Hazleton's Sewage Problem

Hazleton, Pa.—The refusal of the State Department of Health to grant the city of Hazleton the right to build a proposed sewer to empty into a running stream is in line with the Department's policy to institute a radical reform of methods in Pennsylvania. The city already has a fairly good sewer system, the mains emptying into creeks which flow into the Lehigh and Susquehanna Rivers, but additional facilities are needed. Refusal of the application to extend the system means that the city must devise some other plan to get rid of its refuse. The sanitary requirements make some kind of a system necessary and there are only two kinds available. The sewage must either be diverted to a running stream or to a disposal plant. And if a disposal plant is the only alternative, one large enough to take care of all the sewage instead of only a portion may as well be constructed. So it is altogether probable that the radical stand taken by Dr. Dixon will result in the immediate laying of plans for the erection of such a plant. The cost will be in the neighborhood of a half million dollars.

Reducers Increase Odors

Rochester, Pa.—Much complaint has been caused by the odors arising from the sewers and the Street Commissioner has been instructed to flush all sewers and place disinfectant in them. It seems that two years ago the water company placed reducers in the sewer flushers and since then the odors have increased. The reducers will be removed.

Sewer Suit Adjustment is Brighter

Newark, N. J.—Prospects of a settlement of the legal fight by New York to prevent the emptying of sewage from the Passaic Valley into New York Bay have been brightened following correspondence and a conference between Attorney-General E. R. O'Malley, of New York, and Hugh Gordon Miller, special assistant to the United States Attorney-General, in both the Passaic Valley and the Bronx sewer cases. Mr. O'Malley has come forward with a suggestion of a settlement of the questions involved in the Bronx case by a compromise. With that object in view Mr. O'Malley has written to the commissioners of the Bronx River Valley sewer and their attorney, looking to arranging for a conference at Albany. If this meeting should be productive of an amicable adjustment it is believed by those interested in the Passaic Valley sewer project that the settlement of the suit brought to enjoin locating the outlet of that flume in Newark Bay will inevitably follow.

Health Commissioner Lectures to Milkmen

Omaha, Neb.—Dr. Ralph W. Connell, City Commissioner of Health, will take the lecture platform. He will lecture before milkmen for the health of the city, and to this end has secured permission to use the Council chamber in the City Hall for the accommodation of his auditors. It is the intention of the Health Commissioner to tell the dairymen how they can improve their dairies and bring up the standard of their product. He says that with a few exceptions the dairymen in and about Omaha wish to give good service and furnish their customers with pure milk, and he has taken it upon himself to help them in their endeavor.

Typhoid in Rutland

Rutland, Vt.—Seven cases of typhoid fever in this city led to an examination of the city water, and the report from the State laboratory shows the presence of the colon bacilli. The authorities have given warning that water be boiled.

Improving Dairies

South Bend, Ind.—All dairies within a radius of 10 miles of South Bend which supply milk for the city were inspected during July and August, there being a total of 149 dairies and farms visited. Those places that do not conform to the requirements of the pure food laws of 1907 and 1908, and also the rules and regulations of the State Board of Health, for the care and management of dairies in the State of Indiana, were notified by mail to make the necessary changes if they wish to continue selling milk to South Bend after November 1, and from the reports that are coming in since the notices have been sent out, it is evident that cement and plank floors are being installed in stables, walls and ceilings of same are being whitewashed, partitions are being put in between cow stable and place where other animals are kept, and the general sanitary conditions about the premises improved.

Disposal Plant Is Offensive

Washington, Pa.—Washington borough and Washington county face a serious problem at Arden. Apparently either the sewage disposal plant operated by the borough or the Children's Home belonging to the county must be abandoned. They are in too close proximity. The borough has an investment of about \$125,000 in the sewage disposal plant. The county has about \$100,000 investment in the Children's Home. Early in the summer complaint was filed with the Pennsylvania State Board of Health alleging that the odors from the sewage disposal plant were at times unbearable to the inmates of the Children's Home. A few weeks ago Inspector Herbert, of that board, made an investigation of the conditions and filed a scathing report. He said that the stench was sometimes so great, when the wind was blowing from the plant towards the home, that the inmates could not eat in the dining room, that many of them became sick, and all windows had to be shut tight.

Only Severe Frost Kills Flies

Washington, D. C.—The Health officials have issued a notice warning people to keep the screens in their windows until after the first frost. The first appearance of cold weather is no reason why the precautions against flies should be dropped. According to Health Officer Woodward, the fly is the greatest spreader of disease, one of the greatest enemies of humanity and the most dangerous insect.

WATER SUPPLY

Claims Big Leakage During Pressure Test

Beloit, Wis.—Somewhere, somehow, the water that was being pumped into the mains at the time of the general fire test last February was drawn off and did not flow through the hydrants or nozzles down town. This was the sensational testimony sprung by Benazette Williams, expert for the company, at the hearing before the Rate Commission. Mr. Williams stated that the conditions at the time of the test were abnormal and that the test was not a fair indication of the fire protection furnished by the company. He stated that the records show that a great part of the time that the test was on a considerable portion of the water was flowing north and not down town. He estimated that about 25 per cent of the total water pumped during that period escaped and is unaccounted for.

Impure Bottled Water Sold

Buffalo, N. Y.—According to the Health Department, bottled mineral water laden with dangerous sewage germs is being sold in direct violation of the Department's orders that the sale of the particular brand be stopped.

Water Test Is Excellent

Grand Forks, N. D.—The bacteriological test of the new mechanical gravity filter, according to tests of the State Board of Health, is 96 per cent, which is considered good for the time the filter has been in operation. The efficiency of the settling basin is 92 per cent.

Board of Health Condemns Water

Ironton, O.—The Board of Health has passed the following resolution:

Whereas: The Ohio river receives the sewage of several millions of people before it reaches Ironton.

Whereas: It is the source of much typhoid fever and allied diseases.

Whereas: It is not, in the present condition, a suitable source of water supply for Ironton.

Whereas: The city of Ironton, having installed a filtration system that fails to do the work intended, gets its water direct from the Ohio river; therefore, be it

Resolved: That the water furnished by the Ironton City Water Works be condemned, being a menace to life and health and unfit for use.

Resolved: That a copy of these resolutions be forwarded to the State Board of Health, asking that it make an investigation and render such relief as the law allows.

Final Warning For Economy of Water

Johnstown, Pa.—As a result of the continued drought this summer the shortage in the public water supply has become so pronounced that the Johnstown Water Company has issued a final warning, in which it strongly emphasizes the necessity that utmost care in the consumption of water must be exercised and declares that absolutely not the slightest waste will be tolerated. In the warning it is set forth that water must not be used for washing vehicles, operating washing machines, in garden hose, etc. All leaks in hydrants and closets must be remedied under penalty of having the supply shut off.

Faucets Run Salt Water

Mattapoisett, Mass.—The city water supply has suddenly become salty. The towns of Mattapoisett and Fairhaven use a joint water supply. Last year the Fairhaven service was extended to this town and a supplementary pumping station was erected here. Recently the pumps at the Fairhaven well failed to draw water and pumping was discontinued. Consequently the Mattapoisett well was depended upon solely for supplying both towns. Now the Mattapoisett water comes brackish. Several reasons were advanced for this situation. High tides may have contaminated the fresh water supply. It is well known that on the seacoast, in long droughts, fresh water sources of supply become salty and brackish.

Salina May Buy Water Plant

Salina, Kan.—Wynkoop Kiersted of Kansas City, Benazette Williams of Chicago and Jesse Shaw of Topeka, appraisers of the local water plant, have made their report, the figures being \$202,749. An election to vote on a proposition to buy the plant will be called in a few days by the City Council. John Bishop, the superintendent of the plant, says the figures are 25 per cent too low. The figures are satisfactory to the members of the Council.

Gasoline Engine Relieves Water Famine

Middletown, N. Y.—A big gasoline engine was brought down from Harrisburg and put into operation to relieve the water famine in Middletown. Conditions were, however, somewhat improved, the pumps being able to raise the water in the standpipe to the 100-foot mark. This was due to an increased flow from the large concrete dam at Hummelstown, which was allowed to come down the Swatara Creek. Just as soon as the pumps at Hummelstown are stopped, the water is held in check by the dam there, and there is insufficient water to operate the pumps in Middletown. The upper part of the town has been without water for the past few days, and the wells are being resorted to. There are very few of these, and some of the residents are obliged to carry water for some distance.

Pumping More Water Than Can Be Filtered

New Orleans, La.—After receiving a report from Superintendent Earl that the water works were pumping more water than could be filtered properly and that it would soon be put out of business if the waste was not stopped, the Sewerage and Water Board passed a resolution enacting a universal meter rate, and that all water in excess of 10,000 gallons be furnished at the rate of 10 cents per 1,000 gallons. The meter rate follows:

	Per			Per	
	Quarter	Annun		Quarter	Annun
5/8-inch service...	\$1.65	\$6.60	3-inch service...	\$4.00	\$16.00
3/4-inch service...	1.75	7.00	4-inch service...	5.00	20.00
1-inch service...	2.00	8.00	6-inch service...	6.00	24.00
1 1/2-inch service...	2.50	10.00	8-inch service...	9.00	36.00
2-inch service...	3.00	12.00			

Oklahoma Must Have Additional Water Supply

Oklahoma, Okla.—The demands of the city for an increased supply of water are growing at so rapid a rate that within ten years more the whole flow of the river will be inadequate to meet the demands. Two alternatives have been found so far. One plan is to gain a source of water supply in the mountains of the northwest, a distance of 150 to 200 miles and bring this by means of an aqueduct to the pumping plant. The other plan involves the purchase of immense tracts of land miles away to the northwest on the Canadian River for the construction of reservoirs in which water could be stored during the flood season.

Consumers to Turn on Own Water

Peoria, Ill.—A remedy for the evils which the public is supposed to suffer at the hands of the water company was suggested by Corporation Counsel Radley and Alderman Covey. They introduced an ordinance allowing consumers to put in their own meters and turn on the water without getting the permission of the company. It was read by title and referred to a committee. Mr. Radley says he is convinced that this is legal and that so long as the consumer pays the legal rate as indicated from reading his meter that the company can whistle for relief.

Wants Water Survey Before Action

Tacoma, Wash.—Referring to resolutions of Council favoring the development of a Green River water supply, Councilman Lawrence Turnbull says he thinks Tacoma should not act with haste in the matter of deciding on a permanent water supply. He thinks that an expert water works engineer should first be employed to make a thorough examination of the situation, particularly with a view to discover the amount of underground water in the vicinity of the city. Much of the trouble about poor pressure in parts of the city is due, Mr. Turnbull thinks, to small mains. The report of an engineer on a thorough investigation of water supplies should be made the basis of future action.

Water Company May Sell Berlin Basin

Youngstown, O.—Although the city of Youngstown has carried to the Supreme Court its appropriation suits against the Mahoning and Trumbull Water Company to secure land for a reservoir in the Berlin basin, it is possible a settlement may be made before the trial. Recently President J. G. Butler of the Chamber of Commerce and Chairman James A. Campbell of the water company visited the Berlin basin when the entire proposed reservoir site was gone over. It is hoped that the company will set a price on the land which the city can afford to pay.

STREET LIGHTING AND POWER

Overhead Wires Disappear in Baltimore

Baltimore, Md.—That Baltimore will soon be a city where overhead wires will be the exception instead of the rule is evidenced by the report of the work done by the Subway Commission which will be presented to the Board of Estimates when Subway Engineer Phelps goes before that body to ask for an appropriation for next year's work in his department. The report will show that more than two-thirds of the total mileage of subways contemplated has already been constructed, and that it is expected to have the entire system finished in about two years. To put underground all of the overhead wires in the city requires the laying of about 166 miles of conduits, and of this 111 miles has been laid, leaving about 55 miles of the terra cotta pipe to be placed in the ground. Of the \$1,000,000 conduit loan Engineer Phelps spent last year about \$219,000, and to carry the work over a period of another year he will ask the Board of Estimates to appropriate \$300,000.

Virginia City Faces Darkness

Harrisonburg, Va.—This city is face to face with a shut-down of the municipal electric light plant. It has been discovered that a leak is undermining the dam and the plant, and it may be that the electric service, which furnished both lights and power for Harrisonburg, will have to be turned off for several weeks. The power plant is located on the Shenandoah River, 12 miles from Harrisonburg.

Putting Electric Wires Underground

Malden, Mass.—Work has been begun on the big job of putting the wires of the Malden Electric Company underground. By agreement with the city the company is to begin this year. The cost of the work in Malden to care for all the main trunk lines will be \$300,000 and it is to be done in seven years. In the first three years the company will expend \$100,000 and from then until the work is completed \$50,000 each year. The work is being done under the direction of Electrician F. C. Sergeant and the contractor is G. M. Gest of New York, the largest contractor in this kind of work in the country.

Mayor Refuses to Pay Former Rates

Waterbury, Conn.—The five-year contract entered into on July 1, 1904, between the city of Waterbury and the Connecticut Company for supplying lights for the city has expired and Mayor William E. Thoms has sent a communication to the company in which he states that the city would no longer pay the rates as fixed by the old contract, but at the rate at which such service shall be found to be reasonably worth.

FIRE AND POLICE

Fireboat House Completed

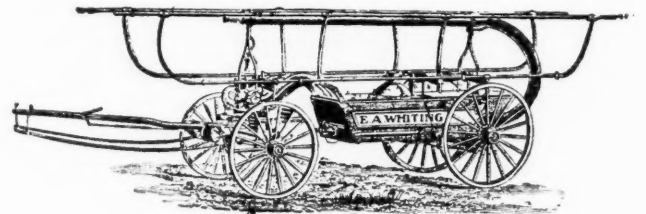
Baltimore, Md.—The handsome structure for the fireboat "Cataract," which is building at Pier 7 of the city's new docks, is rapidly approaching completion. The building is a large two-story structure of attractive, though plain, design. The interior has something of the appearance of a fire engine house. On each side of the ceiling at regular intervals are circular openings for the firemen to slide through in case of a fire alarm. With the exception of two small rooms in the east side of the building the lower floor is taken up by a large hall. A hall also takes up part of the upper floor, but it is much smaller than the lower hall, the rest of the space being divided up into several small rooms, which will be used as an annex for the Harbor Board. The roof is covered with asbestos. Of a similar material will be the shingles to be used in covering the exterior of the walls, something new in building material. Because of the difficulty in getting the shingles, the completion of the building has been delayed considerably. Centrally situated as the building is, it commands a splendid view of the entire harbor, and is within easy reach of all the factories and other large buildings on the water front. From the æsthetic point of view, as well as from that of comfort and convenience of location, the new home of the "Cataract" crew is a great improvement over the dingy old quarters at the foot of Broadway.

Interchangeable Hose and Connections

Clifton Springs, N. Y.—Chief of the Local Fire Department, George H. Muskett, has announced that the hose and hydrant connections of this village are now interchangeable with the hose and connections of three other places in this vicinity. The new system of water works just installed at Shortsville, which has recently been given a thorough trial, is equipped with the universal connections, the same as this village. The connections at Canandaigua and Phelps are also the same size as are used in this village.

Whiting Tub Wins Fourth Money

North Adams, Mass.—Against a field of 13 rival companies the Edwin A. Whiting Veteran Firemen won fourth money, a purse of \$50, at the North Adams muster and



AN OLD MASSACHUSETTS FIRE TUB

playout. In the parade which formed in the morning feature of the muster, the Whiting Veterans were applauded all along the line and were strongly mentioned for the prize for the best appearing tub and body of men in line. The home association, the Adams company, won out.

Report on Akron Department

Akron, O.—A committee composed of members of the Chamber of Commerce has made a report on the Fire Department. The findings are that the Department is divided by factions and that the office of Assistant Fire Chief should be abolished. Fire drills, which cover only practice in hitching up and drilling in the engine house, should also include outside drills, such as running out the hose, coupling up and carrying the hose up ladders ready to turn on water. Steamer companies should be increased from eight to ten men. The adoption of a proper building code is also recommended.

GOVERNMENT AND FINANCE

Authority of Park Association Questioned

Mountain Lake Park, Md.—A vigorous fight is on as the result of the refusal of the Mountain Lake Park Association, a real estate corporation, to grant a franchise to the West Virginia and Maryland Gas Company to introduce natural gas in Mountain Lake Park. The property owners who want the gas have formed a defense committee and have refused for the year 1909, taxes levied on the authority of the annual committee, which is controlled by the association, until the courts decide whether it has the authority to levy and collect taxes. Resolutions have been adopted charging that "The Mountain Lake Park Association has assumed unjust and unlawful authority over the rights and property of the people of Mountain Lake Park, and in refusing to permit the natural gas company to pipe the park and supply the community with gas it is usurping an authority and control over the streets, roads and alleys not warranted by the charter of the community and repugnant to all sense of justice and law."

Will Prune New York City Estimates

New York, N. Y.—Various departmental estimates of expenses for 1910 foot up to \$184,000,000, or about \$28,000,000 more than the budget finally authorized by the Board of Estimate, and that body will take up the task of pruning these figures. Interest on the city debt is the largest item in the budget, totaling \$50,000,000. The Board of Education wants \$34,000,000, an increase of \$6,000,000, while the Dock Department asks for \$4,000,000 more than last year. The Police Department applies for an increase of \$2,500,000, and the Street Cleaning Department has increased its requirements by \$1,000,000.

COMMISSION FORM OF GOVERNMENT**St. Joseph Accepts—Auburn Rejects—Abilene Petitions—Muskogee and Sapulpa Take Steps**

St. Joseph, Mo.—By an overwhelming vote St. Joseph adopted a new charter at a special election, which places the city in the list of those operating under the commission form of government. While the new code for St. Joseph is different from those of Des Moines, Leavenworth, Galveston and a number of cities which have adopted commissions, in some respects it is much more radical than theirs. This is the first city in Missouri to adopt the initiative and referendum. The new charter also provides for the recall and for a public utilities commission. The campaign for its adoption was financed and managed by business men regardless of party and was decidedly spirited.

Auburn, Me.—The special election September 13 on the new city charter prepared by a Board of Trade Committee and passed by the Legislature last winter resulted in its rejection by a vote of 391 in favor of and 473 against the charter. The charter proposed a government by commission, something after the plan in use at Des Moines, Ia. The result showed that the rural wards opposed it while the city wards favored it. Ward 1, a rural ward, voted against it, 56 to 77, and Ward 5, the other rural ward, gave 193 against it and only 43 in favor. The total vote cast—864—is but little more than a third of the regular vote of the city at a municipal election, showing that a majority of the voters took little interest in it.

Abilene, Kan.—A petition for the commission form of government has been presented to the City Council with sufficient names to order an election on the adoption of the commission plan.

Muskogee, Okla.—The City Council of Muskogee has agreed by resolution to call an election for the purpose of changing the city's form of government, the change to be effective not later than next April. At that time the present administration will have served just half its time. The resolution was passed without a dissenting vote and under heavy pressure from business men who are demanding the change.

Sapulpa, Okla.—The commission form of government has been recommended to the City Council by Mayor D. A. McDougal, who has just returned from an extended trip to various cities in which he made a careful examination of the workings of the commission system. It is probable that an election will be called at an early date to get the verdict of the people in the matter.

City Loses Its Charter

Fort Gibson, Okla.—Records of the Federal courts in Muskogee, Tallequah, Fort Smith and Wagoner are being searched in order to find the lost charter of Fort Gibson. Until it is found Fort Gibson is apt to go without water and schools, because the firm which offered to purchase some bonds refuses to take them until it examines the charter.

Lax Accounting System

Guthrie, Okla.—City Attorney Fred W. Green has addressed a letter to Council, stating that the contractor for the water filtration plant has been overpaid \$920. The error was a clerical one and serves to call attention to the fact that the city authorities have been ignoring the statute requiring a financial statement to be published quarterly.

Municipal Work in Pennsylvania to Cost More

Pittsburg, Pa.—Contractor John McQuade, when asked his opinion of the court's decision that the law forbidding contractors to work their employees more than eight hours a day on public work, said that in future work would cost 25 per cent more. He thinks that the minimum day's pay of \$1.50 cannot be reduced and that the men will get that for eight hours' work. A large number of contracts are now under way, taken on a ten-hour basis, which will have to be finished on the eight-hour system.

Pittsburg Faces Deficit

Pittsburg, Pa.—Comptroller E. S. Morrow has notified Mayor Magee that the city is facing a deficit of \$300,000 at the end of the year if the present rate of expenditures continues. Mayor Magee has ordered the departments to economize and informed them that each must reduce its expenses about one-sixth.

REFUSE COLLECTION AND DISPOSAL**Garbage Board Meets**

Boston, Mass.—Mayor George A. Hibbard's Garbage Commission has decided to start its investigation of the city's method of collecting and disposing of garbage. The members of the Commission believe their report will be of benefit to the next administration, which will have the power to make a contract for any number of years. Public hearings will be held. The Commission is determined to submit a report defining what sort of refuse and garbage should be collected by the city and whether the work should be done by contract or by the sanitary division of the Street Department. At the present time the city collects garbage and refuse of the householders, but the large stores and factories are compelled to pay for the disposal of garbage and refuse. The Commission proposes to define where the line should be drawn and determine whether the city should collect at all places.

Adopt Patrol System of Street Cleaning

Guthrie, Okla.—The Council Committee on Streets has made arrangements for cleaning streets by the patrol system. Provisional contracts for the purchase of a "white wing" street cleaning outfit have been made.

Recommends Incineration of Garbage and Rubbish

Pittsburg, Pa.—Dr. E. R. Walters, Director of the Department of Health, has returned to Pittsburg from the East, where he spent a week inspecting reduction and incineration plants in which garbage and rubbish are treated or destroyed. He inspected reduction plants in New York, Philadelphia, Boston, Baltimore and Washington, and in the Borough of Richmond, New York City, on Staten Island, he inspected an incineration plant in which garbage, rubbish and ashes are destroyed. Dr. Walters also made a close study of the methods of collecting and disposing of garbage in other cities and gathered much information concerning the cost to each city. His investigation showed that Pittsburg is paying from two to four times as much a ton as other cities for the disposal of garbage, although in almost all of the cities he visited the work is done by contract, as in Pittsburg. As a result of his observations in the East Dr. Walters is convinced that Pittsburg should build plants for the disposal of both garbage and rubbish, instead of for the exclusive disposal of garbage, as contemplated when the last Councils appropriated \$185,000 for the erection of a garbage disposal plant. Dr. Walters also is convinced that incineration of all garbage and rubbish is the proper method, as he does not believe the city really would profit by building a reduction plant and attempting to preserve the by-products of garbage and rubbish as is done by reduction companies.

Garbage Conditions Bad

Salt Lake City, Utah.—The garbage collectors have got so far behind in their work that in the vicinity of South Sixth and Main streets collections have not been made for two weeks. In one place it was reported that no collection had been made for three weeks.

Location of Garbage Transfer Station Discussed

Washington, D. C.—At a conference between Commissioner H. L. West, Superintendent Wood and Harrison Stidham, the manager of the Washington Fertilizer Company, the question of the collection and disposal of garbage, ashes and refuse was considered at some length. One of the details discussed was the existence of the transfer station in Southeast Washington, and Mr. Stidham, who has the contract for the material collected at the present time, was informed that proposals for the renewal of these contracts will be asked not only upon the location of the transfer station within the city limits, but also outside the District. An available section outside the city, Mr. West explained, is at the south end of the Long Bridge, but it is realized that if this site is selected it will add considerable to the cost of removing the garbage, inasmuch as the additional haul going and returning will be at least two miles. There naturally will be some objections, he said, to the constant procession of garbage wagons over the new Highway Bridge.

RAPID TRANSIT

Noiseless Car Wheels

Chicago, Ill.—The order for 30,000 steel car wheels placed with the Carnegie Steel Company at Pittsburg by the Chicago City Railway Company and the Chicago Railway Company has a double significance. It is further evidence that the railroads of the United States are reaching their limit as to the withholding for financial reasons of orders for equipment, and it is also gratifying assurance that for Chicagoans at least the "flat" street car wheel with its pounding annoyance is to become a thing of the past. The steel wheels which have been adopted for Chicago are known as the noiseless wheels, because they will last three and a half times as long as the old style cast wheels, and are guaranteed not to wear flat. The limit of endurance of a solid steel forged wheel is 140,000 miles, while the maximum limit of usefulness of the cast steel wheel is less than 40,000 miles. The new wheels are not only stronger, but they are lighter than the old wheels by 800 pounds per car. The adoption of the solid steel forged and rolled car wheels by the Chicago traction systems foreshadows a general adoption of the more durable wheel by city traction corporations and by railroads generally.

Successful British Municipal Tramway

Manchester, England.—Vice-Consul John W. Thomas writes that the municipal railways of Manchester, England, earned a gross revenue for the year ended March 31, 1909, of \$1,345,507, of which \$734,066 was net, an increase in profit of \$19,186 over the previous year. From the returns \$340,655 was paid in for the relief of city rates, against \$267,657 the previous 12 months. Of the 155,011,884 passengers carried, 67 per cent paid 2 cents as their fare. The railways also deliver parcels, which can be handed in at any depot or to car conductors for delivery at any place within a half mile from a tram route. The rates vary from 4 cents upward for each parcel, and local tradesmen find it very convenient. The net profit from the parcel-delivery system was \$8,352, against \$5,936 for the previous year.

City to Run Cars on Queensboro Bridge

New York, N. Y.—Trolley cars operated by the city are to be run across the Queensboro Bridge until the deadlock in the Board of Estimate over the bridge franchise has been settled. The bridge, which cost about \$20,000,000, is practically idle. The only transportation across it is a temporary stage line. Bridge Commissioner Stevenson has written to the Board of Estimate asking a special appropriation of \$17,000 to install a city trolley car service until franchise arrangements are made. There is such dissatisfaction in the minds of residents of Queens County with the delay in starting cars that at a public meeting a few days before this announcement it was proposed to ask Governor Hughes to remove the Board of Estimates from office.

San Francisco Would Own Street Railways

San Francisco, Cal.—A plan for municipal ownership of the street railway lines of San Francisco, control to be acquired as the franchises now held by private corporations expire, with a complete system of subways for handling the heavy downtown traffic and giving rapid transit between the city center and outlying districts, is being worked out by the Public Utilities Committee of the Board of Supervisors. An exhaustive report showing the details of the plan is being prepared and will be published by the Supervisors for the information of the public. The basis of the plan is the development of the Geary street line by the municipality, and to this the other lines connecting therewith are to be taken over from time to time as the franchises expire. It is shown that the complete control by the city of the street railway lines will be secured in 20 years.

Strip Tickets Abolished and Restored

Trenton, N. J.—After abolishing the sale of six-for-a-quarter strip tickets for one week the Trenton Street Railroad Company ordered them to be issued again. The company had a perfect right to demand straight 5-cent fares, there being no agreement in their franchise to the contrary. However, in the interests of peace, and rather than have the city enforce other troublesome regulations, the company gave way.

MISCELLANEOUS

Cost of Boston's Automobiles

Boston, Mass.—According to the report of the City Auditor, the City of Boston has paid out over \$108,000 for automobiles, maintenance, repairs and chauffeur hire, of which the costs of the machines footed up \$65,533.13 up to July 1 of 1909 and \$6,350 since that date; \$26,962 for maintenance and repairs and \$12,502.89 for chauffeur hire. The Mayor's automobile, for cost and maintenance up to July 1, cost \$7,877.46, of which the maintenance and repairs amounted to \$3,276. The city now owns and operates 29 machines, three of which have been purchased since July 1.

Baltimore's Dog Shelter

Baltimore, Md.—The accompanying illustration shows the dog shelter at Calverton, which is in the midst of one of its



Courtesy Baltimore Sun.

SEPARATE PENS OF DOG SHELTER

busiest seasons at this time of the year, when the dog crusade is pushed vigorously. The large number of separate pens allow an opportunity for classifying the animals.

Plans New Civic Center for Boston

Boston, Mass.—Plans for civic center, involving an extension of Arlington street and a site for a city hall at Castle Square, drawn by Robert S. Peabody, have met the approval of the Metropolitan Improvements Commission. In a paper written in collaboration with Arthur A. Shurtleff regarding the plan, the fact is brought out that an open space or square before a public building is of service to the community, not alone because it lends dignity to an important edifice and distinguishes it from more private structures, but because such a square insures for it perpetual light and air and allows vehicles and persons on foot to approach it with convenience and without confusion. The importance of such a dignified setting, the authors go on to say, is immeasurably increased when several public edifices are grouped about the margins of such an open space. A nobility of treatment and economy of administration are thereby secured which would be impossible to the same buildings if scattered.

Park Commission Fifty Years Old

Hartford, Conn.—The Park Commissioners will on June 12, 1910, have existed 50 years, which will make the oldest continuous park organization in this country. The matter was introduced at a meeting of the Board, and Superintendent Parker was requested to prepare plans for a fitting observance of the occasion next June for the next meeting of the Board. A souvenir publication covering the work during the past 50 years will be substituted for the regular annual report.

Ordinance Prohibits Fireworks

Trenton, N. J.—Common Council has passed an ordinance prohibiting the sale or use of fireworks, except by special permission of the Mayor, on the Fourth of July and at all other times, and Mayor Madden has signed it.

New York Docks Inspire Philadelphians

Philadelphia, Pa.—The Committee on Commerce and Navigation and a score of Philadelphia officials and business men after inspecting the Bush terminals at Brooklyn and the Chelsea terminals, extending from Fourteenth street to Twenty-third street on the West Side of New York, were unanimously of the opinion that the marshlands in the southern section of Philadelphia must be improved at once. Both of the systems of docks inspected were built by excavation and filling, rather than on the old plan of extending a fill out into the river. Mayor Reyburn deplored the fact that the city is hampered by a law which will not allow it to increase its borrowing capacity, and thus prevents it from going ahead rapidly with a broader development plan in the Delaware River. However, he says he will at once begin work with the \$400,000 already appropriated.

Council Has Luxurious Quarters

Philadelphia, Pa.—The remodeling of the Select Council chamber has been completed. This room has been entirely reconstructed, to provide more light, and the entire side walls rebuilt, the base of Alabama marble, with carved mahogany panels set with a border of inlaid mahogany. The gallery in this chamber has been entirely rebuilt, and is enclosed with a handsome new brass rail of elaborate design. The clerks' desk is constructed of marble and has a mahogany top. The rostrum is constructed in the same manner. The windows have been extended some distance nearer the ceiling and each is surmounted by a heavy mantel of carved mahogany. Instead of the one entrance from the corridor, two doors have been provided, one on either side of the chamber, and each with a vestibule of mahogany and glass panels. In the interior, and directly beneath the gallery, a long seat, upholstered in leather, has been built against the rear wall. This is intended as a retiring corner, in which members may hold private audience among themselves or their constituents who may gain the favor of the floor. Over the private entrance to the Select chamber from the room of the chief clerk of Select Council French portieres have been hung, and the same have been utilized to drape the windows.

Prohibitive Tax on Billboards Is Last Resort

Washington, D. C.—As a last resort in the war against the billboards in the National Capital, Commissioners Macfarland and West favor the imposition of a prohibitive tax on the advertising fences. No definite action along this line is contemplated at present, it is explained, because the Commissioners believe they have the power to revoke the permits of existing billboards, where it is considered advisable, and because the law gives them discretionary powers as to the issuing of any more permits for billboards. Should the courts decide, however, that the Commissioners have not the power to revoke billboard permits, two of the members of the District Board, at least, would favor the imposition of a prohibitive tax on each advertising fence as the final step in their efforts to rid the National Capital of all those regarded as disfiguring the city's beauty.

Mayor Officially Shelves Straw Hats

Wilkes-Barre, Pa.—In a proclamation issued September 14 Lewis P. Kniffen, Mayor of this city, declared that the time for shelving this season's straw hats came on the day following. The proclamation says:

Whereas, the city of Wilkes-Barre is noted all through Pennsylvania as being the home of men's fine millinery, her citizens as the glass of fashion and the mould of form; now therefore,

I, Lewis P. Kniffen, do hereby announce and proclaim that on and after the fifteenth day of September it shall be strictly a gross violation of fashion's law for any man in the city of Wilkes-Barre, County of Luzerne and State of Pennsylvania, to knowingly, willingly or intentionally wear, display, exhibit, flaunt or otherwise aid, abet or encourage the wearing, displaying, exhibition or flaunting of the now obsolete personal adornment of the head known as the straw hat; and it is further

Proclaimed, that any one who gets one of these hats will expose himself to the ridicule of his fellow citizens, and it is urged upon all citizens that, in order to uphold the good name of Wilkes-Barre as a fashion centre, each citizen be and is hereby made a committee of one to indorse, in spirit and in word, the provisions of this pronouncement.

Given under my hand and the appended seal this fourteenth day of September.

LEWIS P. KNIFFEN,
Mayor.

LEGAL NEWS**A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities****Occupation Tax—Telegraph Company**

Atlantic Postal Telegraph-Cable Co. vs. Mayor, etc., of City of Savannah et al.—A city ordinance made under the taxing power of the city's charter imposing a tax on telegraph companies upon their business done exclusively within the city, and not including any business done to and from points without the State, and not including any business done for the Government of the United States, its officers or agents, does not levy a tax on the interstate business of any telegraph company, and is not invalid as being an interference with interstate commerce. Business in the sense in which occupation tax is applied does, not, generally speaking, mean property. It means the activity, the energy, the capacity, the opportunities by which results are reached, a condition rather than fixed tangible objects for which conditions arise, the occupation, the engaging, the doing of the varied commercial acts, and the taking of the requisite steps from which result conclusions and conditions.—Supreme Court of Georgia, 65 S. E. R., 184.

Violation of Ordinance—Appeal

Feagin et al. vs. City of Attalla.—Where an appeal was taken to the city court of Gadsden from a conviction in the mayor's court of the city of Attalla of a violation of an ordinance, and an appeal bond was given conditioned to prosecute the appeal to effect, or, failing therein, to pay and satisfy such judgment as the city court might render, it was error for the city court to treat the case as criminal, and interpret the bond as binding defendant to appear in that court, as the charter of Attalla expressly clothes such appeals with the character of civil appeals from judgments rendered in civil cases by justices of the peace, and it is evident from such section that the only possible judgment on failure of defendant to appear in such case is the affirmation of the judgment.—Supreme Court of Alabama, 50 S. R., 72.

Accident—Notice

Huntington vs. City of Calais.—Where the plaintiff, claiming to have sustained a personal injury by reason of an alleged defect in a public street in the City of Calais, gave to the City Clerk of Calais the 14 days' written notice required by the Revised Statutes of 1903, held: (1) That it did not appear that this notice was ever in any manner brought to the attention of the municipal officers, or any one of them. (2) That there was no presumption either of law or fact that the notice given to the clerk would be brought to the attention of the municipal officers, or any one of them, within the time stated. (3) That the statute required that the information specified in the notice should be actually communicated to one of the municipal officers within the period named, and evidence that the information was given to the City Clerk fell short of this requirement.—Supreme Judicial Court of Maine, 73 A. R., 829.

Excavation—Damage to Street

Village of Haverstraw vs. Eckerson et al.—In a suit to restrain owners of land abutting on a street from excavating and removing the support of the street, evidence held to show that the excavation threatened will destroy the street, authorizing the court to enjoin continued excavations and to require the restoring of the necessary support.—Supreme Court of New York, 118 N. Y. S., 337.

Town Boards—Purchasing Power

State Bank of Barnum vs. Town of Goodland.—Authority to purchase a safe in which to preserve the books, papers and files of the town is conferred on Town Boards, under the provisions of sections 651-654, Rev. Laws 1905. Formal notice of a meeting of a Town Board is not a prerequisite, when all of the members of the board are present at the session and participate in the proceedings.—Supreme Court of Minnesota, 122 N. W. R., 468.

NEWS OF THE SOCIETIES

American Automobile Association.—The programme for the second annual good roads convention, Cleveland, O., September 21-23, is as follows:

Monday, September 20, Hollenden Hotel—Reception and registration of guests, highway officials and delegates at A. A. A. headquarters, by the Cleveland Automobile Club.

Tuesday, September 21, 10 a. m., Chamber of Commerce Hall—Opening address, President Lewis R. Speare, of the A. A. A. "Welcome to Ohio," Hon. Judson Harmon, Governor of Ohio; "Address of Welcome," Hon. Tom L. Johnson, Mayor of Cleveland; "The Second Annual National Good Roads Convention," Geo. C. Diehl, Chairman National Committee, and presiding officer of the convention; "Good Roads in the State of Ohio," James C. Wonders, Highway Commissioner of Ohio; "National Aid and Post Roads," Captain R. P. Hobson, U. S. Representative from Alabama; "The National Grange and Good Roads," N. J. Bachelder, Master National Grange; "The New England Plan for Connecting Lines of Trunk Highways," George S. Ladd, Lecturer National Grange. "State Aid," Jas. H. Macdonald, State Highway Commissioner of Connecticut.

Wednesday, September 22, 10 a. m., Chamber of Commerce Hall—"The Farmers' Interest in Road Improvement," T. C. Laylin, Master Ohio State Grange; "Road Situation in the United States as Compared with Foreign Countries," L. W. Page, Director U. S. Office of Public Roads; "New York State Trunk Lines," S. Percy Hooker, Chairman New York State Highway Commission; "Macadam Roads," A. B. Fletcher, Secretary Massachusetts Highway Commission; "Bituminous Road Materials," Prevost Hubbard, Chemist U. S. Office of Public Roads; "The New York State Grange and Good Roads Legislation in That State," F. N. Godfrey, Master New York State Grange; "Good Roads in the State of Pennsylvania," E. J. Kent, Vice-president Automobile Club of Pittsburgh. A general discussion will follow.

Thursday, September 23—Inspection by guests, highway officials and delegates of improved roads in the vicinity of Cleveland, under the direction of the Committee on Demonstrations. Automobiles will be furnished through the courtesy of the Cleveland Automobile Club.

Municipal Engineers of the City of New York.—The next regular meeting will be held September 22 at 8:15 p. m. in the Engineering Societies Building, 29 West Thirty-ninth street, Manhattan, when a paper entitled "Construction Problems of the Brooklyn Subway," illustrated by lantern slides, will be presented by Mr. J. C. Meem. A luncheon will be served after the meeting. C. D. Pollock is secretary.

Pennsylvania State Electrical Association.—The association, representing about 90 of the 200 electric light and power companies in Pennsylvania, met in Eaglesmere, Sept. 8-10, for its second annual session. The following officers were elected: President, E. L. Smith, Towanda; vice-president, A. R. Grauger, Chester; secretary and treasurer, Van Dusen Rickert, Pottsville. Executive committee: E. F. McCabe, Lewistown; L. H. Conklin, Scranton; R. S. Orr, Pittsburg; J. H. Perkins, Wilkes-Barre; E. Fogarty, Erie.

Massachusetts State Firemen's Association.—The thirtieth annual convention of the association was held in Standish Hall, Plymouth, Mass., September 15-18. The address of welcome was made by Chief Ephraim D. Bartlett, of Plymouth, and was responded to by Chief Burton Steere, of Springfield, and Captain McKissock, of Lowell. The address of the evening was given by Charles H. Donohue, of Boston. Hon. Walter S. Watson, of Lowell, spoke on the benefits of the modern sprinkling system in manufacturing plants. Chief E. F. Dahill, of New Bedford, made an address on "Summer Months' Drill in Fire Departments Composed of Call and Permanent Men."

American Road Makers' Association.—A meeting was held at the Neil House, Columbus, O., September 11, by a number of men interested in good roads, for the national convention of the American Road Makers' Association, which is to be held October 26 to 29, inclusive. Present at the meeting were: James H. Macdonald, State Highway Commissioner of the State of Connecticut and President of the American Road Makers' Association; E. L. Powers, of New York, its Secretary; M. M. Maxwell, of Cleveland, Secretary of the Ohio Good Roads Federation; W. G. Benham, President of the Columbus Chamber of Commerce, and J. Y. Bassell, its Secretary; Ben Harmon, of the Chamber of Commerce Committee on Conventions; State Highway Commissioner J. C. Wonders; George W. Lattimer and A. H. Huston, of the Ohio Good Roads Federation, and Mayor Charles A. Bond. Mr. Benham appointed A. H. Huston Chairman of an Executive Committee to make arrangements for the convention, the committee to be made up of the various chairmen of sub-committees on publicity, entertainment, hotels, railroads, etc. It is expected there will be from 3,000 to 5,000 people present at the convention. The Governor of each State in the Union will be invited to send representatives, and invitations will be sent to every County Commissioner and many township officers in Ohio.

New Jersey State Patrolmen's Benevolent Association.—Seventy-eight delegates, representing twenty-six locals, were present at the convention at Paterson, September 10. John J. Beggans was chosen president, and other officers were elected as follows: Vice-president, James O'Brien, Elizabeth; secretary, W. H. Goodwin, Trenton; treasurer, E. S. Longstreet, Asbury Park; P. G. Gorman, Bayonne, sergeant-at-arms. The next convention will be held at Atlantic City. Governor Fort, who was the principal speaker, favored the passage of a bill for the tenure of office of policemen to protect them against removal.

City Club of Memphis, Tenn.—Judge John P. Young spoke at the club luncheon, September 11, his subject being the relation between the city and county laws. In the course of his remarks he said that while various officials are charged with the enforcement of the laws, under the enactments of the State Legislature the people of any given community are in the end alone responsible for the enforcement of any law. He said in part:

The police force of the city, which acts within the municipality as guardians of the peace, is also under the law powerless to make arrests for many offenses, without a warrant, unless the offense has been committed in their presence. For example, we hear that gambling is being allowed in this city, yet the policemen are not empowered under the law to arrest an alleged gambler or keeper of a gambling house without a warrant, unless they have evidence that gambling has been done through their own observation.

But any citizen has the right to swear out a warrant for any law violation, and it is considered the duty of every good citizen to see that laws are enforced.

The present system worked very well in olden times, when every man knew his neighbor, and when a man who committed a crime became at once an outlaw, and many men knew just where he had fled. But under our more complex government, and with our great population in the cities, the enforcement of the law became a more difficult problem.

This has also brought about conditions, arising from the existence of political factions, which too often result in one or the other faction, when temporarily in power, winking at law violations among its friends, and enforcing the laws arbitrarily among those opposed to it.

Permanent International Association of Road Congresses.—It is announced that in conformity with the decisions of the Government of the Kingdom of Belgium and of the Permanent International Association of Road Congresses a Second International Congress of the Road will be held at Brussels, opening July 31, 1910, at the festival hall of the Palace of the Academies and at the section halls of the Palace of the Nation; it will last for seven days.

The following are members of the Congress:

1. The specially appointed delegates of the Belgian Government and of foreign Governments.
2. The permanent members of the Permanent International Association of Road Congresses.
3. Temporary members who make proper application.

The programme of questions and communications is as follows:

Section 1—Construction and Maintenance: Sub-section A, Construction and maintenance outside of large cities: 1st Question, Macadamized and paved roadways.—Use of binding materials in the construction of macadamized roadways.—Use of running tracks in paved roadways.—Progress of the struggle against dust and wear and tear. 2d Question, Foundation and drainage of roads.—Methods of work. 3d Question, Construction of local railways and of tramways on roads. Advantages and disadvantages.—Influence on the mode and cost of maintenance.

Sub-section B, Construction and maintenance within large cities: 4th Question, Cleaning and watering.—Necessity or usefulness.—Means used.—Net cost.—Comparison with other processes. 5th Question, Choice of the method of surfacing. 6th Question, Way of carrying on street work, lighting and water supply.

Communications of the 1st Section: Communication 1, Use of mechanical rollers driven by petroleum engines. Communication 2, Equipment for roads exclusive of mechanical rollers, machines for breaking up the surface, etc. Communication 3, Materials of all kinds used in the construction and maintenance of roads; qualities to be demanded, tests on reception, units adopted. Communication 4, Laying sidewalks in cities. Communication 5, Removal of snow and ice.

Second Section.—Traffic and Working: 7th Question, Influence of the weight and speed of vehicles on works of art. 8th Question, Rolling stock on roads.—Conditions to be fulfilled by a vehicle moved by animal or mechanical power in order to circulate on roads without causing abnormal deterioration and without undergoing itself any special injury. 9th Question, Conditions of operation of transportation in common by land and with vehicles other than tram cars.—Advantages, disadvantages, capacities, net cost, etc.

Communications of 2d Section: Communication 6, Road signals—Steps taken to carry out the decision of the Congress of Paris. Communication 7, Different kinds of flexible tires: utilization, advantages, disadvantages, etc. Communication 8, Census of circulation, of tonnage and of traffic; means employed and results obtained; units adopted.

American Institute of Electrical Engineers, Seattle Section, and Northwest Electric Light and Power Association.—A joint convention began a three days' session in the Palace of Fine Arts, Seattle, Wash., at the exposition September 7. Arthur Gunn presided as chairman of the initial meeting, and Ralph W. Pope, secretary of the American Institute of Electrical Engineers, was the principal speaker, telling of the administration of Institute affairs. The leading light and power plants and electrical firms in the State of Washington were represented. C. E. Flagler, of the Pacific Telephone and Telegraph Company, spoke on "Modern Central Telephone Stations," and Paul M. Lincoln, of the Westinghouse Company, read a paper on "Protection of Electrical Equipment."

Pacific Coast Fire Chiefs' Association.—The seventeenth annual convention of the association was held at Seattle September 7-10. Mayor John

F. Miller welcomed the association, and Chief George McAlevy, Tacoma, responded. Chief Harry Bringham, Seattle, read a paper on "Fire Barriers and Water Distribution." Chief Bringham recommended for the interior of large buildings and plants automatic sprinklers of various designs. Brick or concrete walls, dividing all structures in the ordinary row, or even walls composed of double-inch plank, were endorsed by the Chief as being of immense value in retarding fire. He advocated an ordinance in all large cities providing for the best possible side and rear walls, without unprotected openings, on every frame structure not a dwelling. The paper created a good deal of discussion. Other papers that attracted a great deal of interest were "Fire Extinguishers in Dry Kilns," by W. J. Kingsley, Chief of the Everett Fire Department; "Hook and Ladder Truck Service," by Chief Thomas Davis, of Victoria; "Fire Alarm Telephones in Small Towns," by Chief Schueller, of Ellensburg. In the discussion which followed the last paper it was pretty generally agreed that the electric signals were preferable. A good deal of time was spent in visiting the great industrial plants of the city and watching exhibitions of their fire fighting facilities. The adaptability and cost of maintenance of apparatus and motive power were discussed. The consensus of opinion appeared to be that save in the case of heavy engines the auto apparatus, in covering ground, making the greater number of calls and hauling the larger amount of hose, had been favored and found preferable to the horse. Stockton, Cal., was chosen as the next meeting place. The following officers were elected: Harry W. Bringham, Seattle, president; H. S. Ferris, Lewiston, Idaho, and R. S. Mantrum, Anaconda, vice-presidents.

International Association of Municipal Electricians.—The fourteenth annual convention was called to order by President J. B. Yeakle at 11 a. m., September 14, in the Convention Hall at Young's Pier, Atlantic City, N. J. Mayor F. P. Stoy delivered an address of welcome in which he emphasized the fact that the safety of lives and property was dependent on the members. Past President Thompson, of Richmond, Va., responded on behalf of the association. The afternoon session was opened by the president's annual address. He gave a brief review of the past, stating how, at first, the membership had been composed of fire alarm and police telegraph superintendents; now the field has broadened and all classes of municipal electrical engineers are included. The municipal electrician of to-day, he said, was not developed from the ranks of fire alarm or police telegraph superintendents. He must have a broader education and be capable of attacking much more complicated problems. The underground systems and the troubles incident thereto was quoted as an illustration. He advocated the training of men for all such positions and spoke of the advantages gained by joining such associations as ours and the American Institute of Electrical Engineers.

Following the president's address Mr. Downs, of Altoona, Pa., read a paper on "Grounding of Alternating Current Secondaries." He spoke of the great danger arising from failure of insulation on primary and secondary circuits. This could be avoided by grounding, and he presented a resolution that the association demand the enactment of

legislation requiring the grounding of alternating current secondaries, when the voltage between the earth and any part of the secondary system will not exceed 250 volts. In the discussion which followed several instances were cited where loss of life, which could have been avoided, had resulted from the non-grounding of such circuits. There was shown a disposition to object to the rather arbitrary resolution demanding legislation on the subject, but it was carried.

At the opening of the third section Messrs. Kingsbury, Ellett and Diehl were appointed a committee on exhibits. R. A. Smith, of Norfolk, Va., read a paper on "The National Electrical Code—Its Proper Interpretation and Bearing on Fire Alarms and Police Signal Work." In it the author said he wished to bring out the rules which are so often misunderstood, especially those bearing on fire and police signal work. The fire and police central office wiring is often far from being what is required by the code, suitable fireproof racks and cabinets being conspicuous by their absence, high-tension and sneak-current protectors not being provided and often bell wiring being used to carry heavy voltage currents. The source of energy often being a trolley circuit, with its voltage above 500, and one side grounded, it could be easily seen that the protection necessary must be of the best. The proper observance and interpretation of this and other rules of the code relating to line wire and lighting in general, are of vast importance to the city electrician, and he will find constant study and application necessary in order to keep abreast of the march of improvements and changes in the rules.

Discussing the paper, several spoke of the occasional conflict of district and national committee's rules. On motion the president was empowered to appoint a committee to represent the association at the meetings of the National Conference on Electrical Rules.

The president appointed the following committee on nominations: H. C. Bundy, James Warren, J. C. Simpson, C. E. George, R. A. Smith.

A paper on "The Progress of the Fire Alarm Telegraph" was next read by the author, S. W. Manning, of St. Paul.

He was followed by H. C. Bundy, of Syracuse, with a paper on "Telephones and Their General Use for Fire Alarms." He decried the use of telephones for sending alarms, as many serious mistakes had happened by misunderstanding the names of streets. If it was to be adopted, a specially trained operator should be stationed at the exchange to take care of such calls. In the ensuing discussion the majority of members agreed with Mr. Bundy.

The Wednesday afternoon session was opened by a demonstration of a device for determining when insulation is growing weak. After this, A. C. Farrand, of Atlantic City, read a paper on "Locating Faults on Fire and Police Telegraph Lines Without Opening the Circuits." He illustrated and described at length his plan, which was commented upon favorably by the members.

W. S. Devlin, Newcastle, Pa., read a paper on "The Construction of Underground Conduits." In the discussion of Mr. Devlin's paper some advocated oval manholes without corners, avoiding bending of cable and the sucking of covers. Various means of protecting cables were also suggested.

Thursday morning session: A paper

by Mr. Dixon on "Storage Batteries for Fire and Police Telegraphs" was read and demonstrated by means of a model battery. In the discussion the matter of covers for the jars was brought out and some favored glass in preference to porcelain for this purpose. A query: In a system with a great number of circuits, where the power plant is a storage battery, would it be considered entirely safe to have one battery of large capacity supplying currents to all circuits through a buss bar, with a duplicate set in reserve, one set charging while the other is in use? The impression seemed to be that the scheme would not be good practice.

Thursday afternoon session: The nominating committee presented the following names, and upon motion the secretary was instructed to cast a ballot for the gentlemen for the various offices to be filled: President, J. B. Yeakle, Baltimore, Md.; first vice-president, J. S. Craig, Toronto, Can.; second vice-president, A. L. Kittredge, New Haven, Conn.; third vice-president, A. J. Bell, New Rochelle, N. Y.; fourth vice-president, C. S. McCosker, Mobile, Ala.; secretary, F. P. Foster, Corning, N. Y.; treasurer, C. E. Diehl, Harrisburg. Executive committee: S. W. Manning, St. Paul; H. G. Kennedy, Rochester; H. L. Kingsbury, Baltimore; O. M. Schaefer, Trenton, N. J.; A. L. Pierce, Wallingford, Conn.; J. C. Simpson, Washington, D. C.; Clarence George, Houston, Tex.; S. C. Downs, Altoona, Pa.; J. W. Kelley, Camden, N. J. Finance committee: T. C. O'Hearn, Cambridge, Mass.; J. Murphy, Cleveland, O.; O. F. Gall.

A motion was passed recommending that the association hold four-day sessions instead of three. Also that the executive committee prepare a certificate of membership.

Rochester, N. Y., was chosen as the place for the next convention, the date to be set by the executive committee.

The local chairman, A. C. Farrand, deserves great credit for the very interesting programme of entertainment provided for the members and friends. The ladies especially were well provided for.

Calendar of Meetings

September 21-23.

American Automobile Association.—Second Annual Good Roads Convention, Cleveland, O.—F. A. Pease, Chairman Demonstration Committee, Cleveland, O.

September 21-24.

League of California Municipalities.—Twelfth Annual Convention, Santa Cruz, Cal.—Wm. J. Locke, Secretary, Pacific Building, San Francisco, Cal.

September 25-27.

Illuminating Engineering Society.—Annual Convention, New York, N. Y.—P. S. Millar, Secretary, 25 West 39th street, New York, N. Y.

September 29.

New Hampshire State Firemen's Association.—Convention, Woodsville, N. H.—George L. Osgood, Secretary, Concord, N. H.

September 29-30.

Ohio Fire Chiefs' Association.—Convention, Alliance, O.—D. K. Mosher, Secretary, Warren, O.

October 4-8.

American Street and Interurban Railway Association.—Annual convention, Denver, Col.—B. S. Swenson, Secretary, 29 W. 39th St., New York, N. Y.

October 7.

League of Virginia Municipalities.—Fourth annual meeting, Staunton.—J. Davis Reed, Portsmouth, President; L. C. Brinson, Portsmouth, Secretary.

October 19-22.

American Public Health Association.—Annual convention, Richmond, Va.—Charles O. Probst, Secretary, Columbus, O.

October 20.

American Gas Institute.—Annual meeting, Detroit, Mich.—A. B. Beadle, Secretary, 29 W. 39th St., New York, N. Y.

MUNICIPAL APPLIANCES

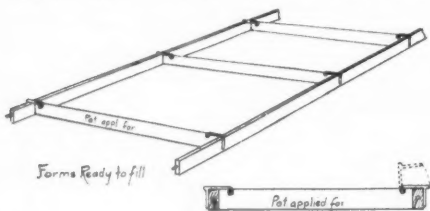
Appliances for Cement Walks

S. C. SMITH & SON, Waverly, N. Y., manufacture a patent rail clamp and division plate by means of which, it is claimed, considerable economy may be effected in the construction of cement sidewalks. The outside rail, the manufacturer states, requires no stakes when the Smith patent rail clamp is used, and six stakes in a hundred running feet of walk are sufficient. The following is a description of the method of setting 100 feet of rails with six stakes and the rail clamp:

First—It is necessary to have the rails sized to 2 x 4 inches. If the rails are 1 3/4 x 4 inches it should be specified, as special provisions are made for 1 3/4 x 4-inch rails.

Second—It is necessary to bore a 1/2-inch hole 3 inches deep in the center of each end of the rails, and in one end of each rail insert an iron dowel, letting it stick out of the rail 2 inches. This dowel will hold the back end of the rails in position.

Third—Two stakes in the first line rail and one stake in the head end of each sub-



SMITH PATENT RAIL CLAMPS AND DIVISION PLATES

sequent rail is all that is necessary for the line rails. The rails for the street side of the walk are laid on the ground with a stone under each end of each rail and one in the center; this is for a bearing and to keep rails to the grade, the dowel holding them in place.

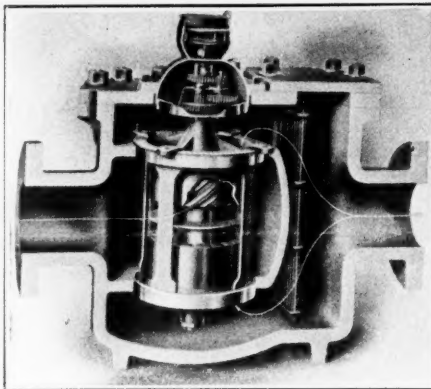
Fourth—The Smith Patent Rail Clamps and Division Plates are now put in place.

Fifth—The bed having been made the forms are now ready to be filled, and when tamping is begun, you will have no trouble with rails spreading, for the division plates and clamps spaced every five feet will hold the rails to a straight line. When the top coat is put on and sawed down, the clamps on the division plates, when loosened, form a handle to pull out your division plates. There are no wedges to loosen, and in case one man is finishing alone he can pull the division plate half way out by means of the pivoted clamp and finish on one side; then pull the division plates out as fast as he comes to them when finishing the opposite side of the walk. The outer rails are then free and the inside rails have but six stakes, and these were driven only hard enough to hold rails to line.

Nilo Water Meter

The Union Water Meter Company, Worcester, Mass., makes a velocity meter, for which some points of superiority are claimed. These, briefly stated, are: Hard rubber piston, in two sections, the upper having right and lower left-hand helical vanes, the two halves being separated by a deflector plate, insuring discharge of equal volumes of water from upper and lower halves of piston, thus maintaining absolute equilibrium, absence of thrust and extreme accuracy on all flows.

The vanes are encased in a rubber shell, so greatly strengthening them that possibility of breakage is very slight. Interior of piston is chambered, in which is placed a specially improved buoyant material which relieves weight of bronze shaft and pistons on step bearing to such an extent that there is practically no weight whatever on ball bearing of step, thus eliminating friction, insuring sensitiveness and long continued service. As vanes of piston are inclosed by the integrally revolving shells, no water can pass through meter without actually passing through piston.



NILO WATER METER

Intermediate gearing has bronze pinions and spur gears of a specially compounded non-corrosive material, very nearly specific gravity of water, hard, durable and fully guaranteed. Gearing is protected from possible accumulation of rust by a bronze dome, on which rests register and case. This dome can be turned around so as to bring register in most convenient position for reading.

All working parts, excepting register, are assembled as a single unit and can be removed as such without taking the meter out of line of pipe.

Inlet chamber of meter is provided with a screen of the bar type, and is claimed to be the best ever put in a meter, as its construction is such that retardation of flow is reduced to a minimum and labor of cleaning can be easily and quickly performed.

Steam-Propelled Tar Sprayer

A STEAM-propelled machine for spraying tar under high pressure on the surface of a roadway, invented by Thomas Aitken, of Cupar-Fife, Scotland, has lately been imported by the Barrett Manufacturing Company, of Boston, for use in dust laying and in construction work.

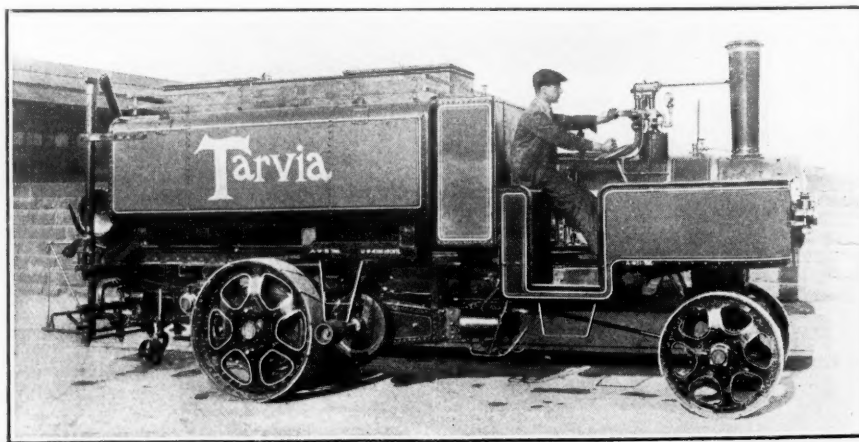
The tank and tarring apparatus are mounted on a steam truck built by the Mann Patent Steam Cart & Wagon Company, of Leeds, England, who build many of the wagons which are now very common on the roads of England hauling heavy loads in competition with the railroads. The truck is mounted on broad, flat wheels, so that it causes no injury to macadam roads, but acts in the capacity of a road roller. The motive power is supplied by a steam engine mounted beneath the frame and connected with the hind axle with gears. Two speeds are sup-

plied and the differential gear is provided with a locking device so that the machine is able to pull itself out of a hole if one wheel sinks into a bad place and slips. Steam is furnished by a small locomotive boiler, using bituminous coal or coke as a fuel. The steam pressure carried is 250 pounds. The road speed of the truck is five miles an hour, but during spraying the speed is cut down to three miles an hour.

Tar pumps take the tarvia from the large supply tank of 1,000 gallons' capacity and force it into an intermediate cylinder against an air pressure of about 120 pounds. The tarvia is then led into four spraying nozzles which are inclined slightly forward at about nine inches from the ground at the back of the machine. The nozzles are of the bat-wing type and are protected by strainers so that they do not become clogged during action.

On the Metropolitan Park System, on the north of Boston, the machine has worked satisfactorily recoating the tarvia work which has been in use for a number of years on the Revere Boulevard. On this work the machine sprays about one-third of a gallon to a square yard in a strip six feet wide while the machine is running three miles per hour. The amount can be varied slightly by varying the speed of the motor truck. Construction work has been done at several points on Beacon street, Brookline, and on the Metropolitan Park System in the Middlesex Fells District and on the new Charles River Basin work between Cambridge and Boston. In construction work the machine is used to apply two coats of tarvia to the second course of a macadam road before any binder is applied. This double coating covers all the stone on the surface in a very even manner. The road is then rolled and a third and final coat of tarvia is applied, followed at once by clean stone screenings. The road is then rolled until hard.

Beacon street, Brookline, has been open to travel about a month and has been entirely satisfactory. The use of the machine has resulted in an economy of tarvia due to the very even coatings which are applied. The resulting road is claimed to compare very favorably with much more expensive work where the stone has been mixed with bituminous material before laying on the road. The Charles River Basin work is not yet finished, but the completed part presents a very attractive surface. The work is watched with interest by the road engineers in the vicinity of Boston.



STEAM PROPELLED TAR SPRAYING MACHINE—PNEUMATIC PRESSURE

TRADE NOTES

Cast-Iron Pipe.—Chicago: Inquiries are beginning to be received for next year deliveries, but no orders have been placed. Quotations: 4-inch, \$27.50; 6 to 12-inch, \$26.50; 16-inch and up, \$25.50. New York: Pipe foundries are becoming more confident as to the future and a general disposition is shown to ask higher prices. Quotations: 4-inch, \$27.50; 6 to 12-inch, \$26.50; 16-inch and up, \$25.50.

Lead.—The price has weakened and sales have been made in New York at 4.375c., although the American Smelting and Refining Company continues to market it at 4.40c. St. Louis market is weak and sales have been made at 4.25c. London market unchanged at £12 13s. 9d.

Warrenite.—A representative of Warren Brothers, of Boston, appeared before the Board of Freeholders of Passaic County, N. J., September 15, and asked that the Board arrange its road specifications in the future so that his company could bid on Warrenite, a new pavement which the company was laying and which is particularly adapted for country roads, where the traffic was not as heavy as in cities. He said that it was superior to Amiesite and other similar pavements, and had the approval of the State Road Commissioner. He talked at length on the merits of his pavement, and when he finished the members promised to give him a chance to bid after the County Engineer had looked into the merits of the pavement.

Short Leaf Pine Block.—The Georgia Creosoting Company states that its main purpose in paving at Washington, Ga., is to introduce the short-leaf pine block through that contract. The company believes the blocks compare favorably with long-leaf pine blocks and intends to have Government authorities keep records of the durability of the pavement. The block is of the usual dimensions for this class of work, viz., 3 x 3½ x 8 inches, and weighs when treated about five pounds on the average, and will contain 20 pounds of creosote to the cubic foot. Standard methods of street paving for city traffic will be followed in laying this block. The Georgia Creosoting Company has its general offices at 25 Tucker street, Trenton, N. J., with plant and shipping point at Ficklin, Ga. It manufactures wood preservers, wood pipe conduit, crossarms, etc. Arnold Hill is manager at Ficklin.

Garbage Company Fails.—Notice of foreclosure of the mortgage held by John L. Severance, Cleveland, O., amounting to \$32,000 on the property of the Bridgeport By-Product Company was filed in Bridgeport, Conn., September 15. The judgment in foreclosure was made by the Superior Court June 25, and the time for the redemption of the equity has expired. The company had contracted to dispose of the garbage of Bridgeport for ten years, four of which have expired.

Sewerage Appliances.—The Ansonia Manufacturing Company, makers of sewage ejectors and controls, has removed its offices to 30 Church street, New York.

Contracting Company.—The Empire Construction Company, of St. Louis, Mo., has opened an office in the Fullerton Building. The company will make a specialty of tunnels, foundations, caissons, pile driving, excavating and all classes of concrete work. M. W. Cluxton is in charge of the office.

PERSONALS

ALVORD, THOMAS G., Superior, Wis., has been appointed City Treasurer by Mayor Crumpton, to fill the vacancy caused by the death of the late Robert L. Hunter.

AYDELOTT, A. L., Briscoe, Ark., has been elected Mayor; E. B. Odom, Recorder; W. M. Caraway, J. C. Rogers, T. J. Phillips, W. A. Conner and Albert Davis, Aldermen.

BATES, W. B., Roanoke, Va., lately City Engineer, has become associated with H. H. Hubbins, with headquarters in that city.

BEALS, JOSEPH E., Middleboro, Mass., Water Commissioner for 25 years, died September 3.

BRIGHAM, HARRY W., Watertown, Mass., has been elected Town Treasurer, succeeding Charles W. Stone, resigned.

BROCK, A. W., Norfolk, Va., has been elected City Treasurer to fill the unexpired term of H. S. Herman. Colonel George C. Cabell has been elected City Attorney.

CLARKE, FRED W., Indianapolis, Ind., Chemist in the city laboratory, has resigned to accept the chair of chemistry, Franklin University, Franklin.

CORIELL, A. S., Elizabeth, N. J., has been appointed Assistant to the City Surveyor in the intercepting sewer division.

DAVIS, HENRY B., Inspector of Plumbing of the District of Columbia, who has been in the District service since 1895, has resigned to become a member of a local firm engaged in construction work.

FINN, T. H., Holyoke, Mass., Alderman, has severed his connection with the American Writing Paper Company after 20 years of service. Alderman Finn is the second member of the city government to leave the employ of that company within the past year, after years of service.

FORTIN, E. H., St. Albans, Vt., has been elected Chief of the Fire Department, succeeding A. W. Coote, resigned. Mr. Fortin is also Superintendent of Streets, and will combine the duties.

HARRIS, L. M., City Auditor of Springfield, O., died September 14.

HAZLEHURST & ANDERSON, Consulting Engineers, Candler Bldg., Atlanta, Ga., have been retained by the Water Commission of Natchez, Miss., to report upon needed improvements, including the extension of mains and the erection of a new water tower.

HINKLEY, WALTER H., Syracuse, N. Y., Alderman, Alderman Charles A. Wolfarth, Michael J. Gleason, Thomas H. Callahan and Frank E. Allen have been appointed a Special Subway Committee of the Council.

LONGA, HORATIO W., Chief of Police of Manchester, N. H., over twenty years ago, and a veteran of the Civil War, passed away recently, aged 74 years.

MCGONEGAL, A. R., Washington, D. C., for a number of years Assistant Inspector of Plumbing, has been appointed by the Commissioners Acting Inspector of Plumbing; vice Davis, resigned.

MATTAIR, H. L., Carrabelle, Fla., has been elected Mayor of the town; R. P. Bradford, Marshal and Collector, and J. R. Blocker, Clerk, Assessor and Treasurer.

O'CONNOR, JAMES, Superintendent of Water and Electric Lighting, of Sparta, Minn., died recently of Bright's disease, aged 43 years.

WITHAM, M. E., engineer in charge of the construction of the Stanley Lake dam near Denver, Colo., has resigned and will devote his attention to private practice, with an office in that city.

BOOK REVIEW

Dustless Roads—Tar Macadam.—By J. Walker Smith. London: Charles Griffin & Company, Ltd. Philadelphia: J. B. Lippincott Company. 1909. Cloth, 6½ by 9 inches, 225 pp., 24 illustrations. Price, \$3.50.

This book is a practical treatise for engineers in charge of road building and for contractors. The author is the City Engineer of Edinburgh, Scotland, and he describes British practice for the most part. Although there are no better roads to be found anywhere than those in the British Isles, a universal change of circumstances in the traffic demands an improvement in the methods of construction. Extension of the use of tar macadam the author looks upon as the solution of the problem. At the outset, attention is called to the necessity of using tar of standard physical and chemical properties. In order to give the reader a thorough knowledge of the material dealt with a chapter gives an account of the different processes for manufacturing tar. The author does not fear any scarcity of tar due to the new demands, and believes that the possibilities of production are as indefinite in extent as the probable demand. Tests of tar for volatile matter, residue, viscosity, free carbon and adhesion are considered as necessary. The merits of limestone, blast furnace slag and granite are all considered as aggregates. The author is of the opinion that the merits claimed for slag on account of its porosity have very little scientific foundation. Some sixty pages are devoted to the discussion of the different methods of preparation and laying of tar macadam. The costs of manual mixing and laying complete are given and a description of mechanical mixing plants and their cost. Patent and proprietary tar concretes, chief among them "Tarmac," are given a chapter. The author thinks that nothing is gained by the cloak of secrecy in connection with tar macadam, and is satisfied that for the public benefit the fullest information possible should be given in order to facilitate the standardization of tar macadam for various purposes. Two kinds of tar grouted macadam are described, that in which the coarse sub-grade of macadam is grouted, upon which is superposed a fine tarred topping, and that in which the grouted macadam is merely sprinkled with tar chippings to even up the grade. The necessity for thorough permeation and surface seal are emphasized. Macadam grouted with flux or tar matrix and sand or chippings is considered as a class by itself. Examples of this are roads laid by the Liverpool specifications, Cassell's patent and the Gladwell method. A chapter is given to the description and illustration of batch and continuous mixers. Coming to general considerations, the effects of wear, porosity, density and distribution of weight are discussed. Scavenging, watering and maintenance are discussed and opinions of a large number of engineers on these points are quoted. The advantages of different contours and gradients are taken up, together with questions of noiselessness and hygienic advantages. Under the caption of rolling and tractive efforts the results of experiments are stated. A chapter of local interest deals with the road mileage in England and various financial considerations of reconstruction. The final chapter deals with tar spraying of ordinary macadam for dust laying.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Pennsylvania	Pitcairn	Sept. 24, 8 p.m.	Grading and paving Fifth and Eleanor sts.; grading Sixth st.	Harrop, Hopkins & Taylor, Boro Eng.
Ohio	Canton	Sept. 24, noon	Improving East Fourth st. and Warner ave.	J. Starrett, City Engineer.
Ohio	Toledo	Sept. 24, noon	Paving one and repaving one st.; any material	Reynold Voit, Secy. B. P. S.
New Hampshire	Concord	Sept. 24, 5 p.m.	Bldg. gravel road in Northumberland to cost \$3,400.	A. W. Dean, State Engineer.
Ohio	Cincinnati	Sept. 24, noon	Improving three roads.	Fred. Drehs, Clk. Co. Com.
Illinois	Grand Ridge	Sept. 25, 3 p.m.	Graveling 320 rods on two roads for Farm Ridge	D. J. O'Mara, Chm. Hwy. Comrs
Virginia	Roanoke	Sept. 25, noon	Bldg. granolithic walk on Fourth st., southeast	W. B. Bates, City Engineer.
Wisconsin	Racine	Sept. 25, 10 a.m.	Brick paving, 1,707 sq. yds.; Fifth street.	F. H. Connolly, City Engineer.
Indiana	Terre Haute	Sept. 25, 11 a.m.	Bldg. 3 stone roads in Fayette twp.; Strole rd., 5,280 ft. long; Rhyon, 2,657 ft.; Hutchinson, 1 mile.	Nathan G. Wallace, County Auditor.
Utah	Ogden	Sept. 27, 8 p.m.	Bldg. sidewalks, curbs, gutters, Dist. No. 105	A. F. Parker, City Engineer.
Oklahoma	Elk City	Sept. 27, noon	Eight blocks sheet asphalt paving, inc. curb, sewers.	R. J. Carlie, City Clerk.
Illinois	Bridgeport	Sept. 27, noon	Brick paving, 22,000 sq. yds.	Board of Local Improvements.
Washington	Spokane	Sept. 27, 2 p.m.	Grading, draining, macadamizing Regal Road No. 50.	H. L. Bowley, Secy. State Hwy. Bd.
Ohio	Jefferson	Sept. 27, 1 p.m.	Grading, draining, macadamizing road; cost, \$35,000.	J. S. Matson, County Surveyor.
New Jersey	Fort Hancock	Sept. 27, noon	Constructing concrete walks at post.	Lieut. C. J. Goodier, Q. M.
Kentucky	Ashland	Sept. 28, 7 p.m.	Vit. brick paving, 44,860 sq. yds.; comb. curb and gutter, 24,490 ft., with catch basins; 4,000 lin. ft. conc. header.	E. A. Shepard, City Clerk.
Nebraska	Omaha	Sept. 28, 8 p.m.	Paving or repaving 10 sts.; any material; curb, etc.	Dan B. Butler, City Clerk.
Illinois	Marshall	Sept. 28, 2 p.m.	Vit. brick paving, 13,648 sq. yds., etc.; cost, \$24,767.	Board of Local Improvements.
Ohio	Mt. Healthy	Sept. 28, noon	Grading, macadamizing, etc., St. Clair avenue.	Frank Williamson, Village Clerk.
Washington	Wenatchee	Sept. 28, noon	Furn. power-driven road roller, f. o. b. Wenatchee.	S. R. Sumner, City Clerk.
Washington	Vancouver	Sept. 28, 11 a.m.	Bldg. 8,100 ft. of Reserve street including drains, etc.	Constr. O. M., Vanc. Barracks.
New Jersey	Paterson	Sept. 29, noon	Macadamizing a portion of Union avenue.	W. S. Cox, Chm. Bd. Freeholders.
New York	Brooklyn	Sept. 29, 11 a.m.	Regulating and asphalt block repaving on concrete, etc.	Bird S. Coler, Boro. President.
Rhode Island	Providence	Sept. 29, noon	Bldg. 47,520 ft. State road in North Smithfield and Smithfield.	John H. Edwards, Chm. St., B.P.W.
Pennsylvania	Carnegie	Sept. 29, 7:30 p.m.	Grading, curbing, paving, etc., 6 sts and alleys.	T. J. Kearns, Chm. St. Com.
Georgia	Atlanta	Sept. 30, 3 p.m.	Wood block paving; Marietta st., 10,200 sq. yds. and 7,000 sq. yds.; also Forsythe st., 2,150 sq. yds.	R. M. Clayton, City Engineer.
Alabama	Mobile	Sept. 30, noon	Wood block paving, 29,267 sq. yds. Michigan avenue.	Wright Smith, C.E. & Bd. Pub. Wks.
Mississippi	Meridian	Sept. 30, 8 p.m.	Paving 112,000 sq. yds., any hard material, and 17,000 lin. ft. concrete or granite curb on 5 avenues and 4 streets.	C. W. O'Leary, City Clerk.
Ohio	Jefferson	Sept. 30, 1 p.m.	Grading, curbing, macadamizing 2,295 ft. Walnut street.	D. C. Remick, County Auditor.
Wisconsin	Prescott	Oct. 1, noon	Grading, Dakota st. from Walnut to Kinnickinnic street.	R. H. Price, City Clerk.
Ohio	Cleveland	Oct. 2, noon	Grading, drainage, etc., St. Clair road, 2 twps. and village.	A. B. Lea, County Surveyor.
Indiana	Newport	Oct. 4, 10 a.m.	Constructing 3 gravel roads.	H. T. Payne, County Auditor.
Indiana	Delphi	Oct. 4, noon	Constructing 3 gravel roads in two townships.	M. G. Haun, County Auditor.
Indiana	Williamsport	Oct. 4, 1 p.m.	Constructing 10,775 ft. gravel roads in Pike township.	Robt. L. Winks, County Auditor.
Indiana	Greencastle	Oct. 4, 11 a.m.	Improving 2 roads, 3,610 ft. and 5,020 ft. long, of macadam.	D. V. Moffett, County Auditor.
New York	Mt. Kisco	Oct. 4, 8 p.m.	Macadamizing Main st.; grading Manchester terrace.	F. J. Carpenter, Village Clerk.
Wisconsin	Appleton	Oct. 4, 2 p.m.	Concrete pavement, etc., Market st. in Second Ward.	E. L. Williams, City Clerk.
Idaho	Twin Falls	Oct. 4, 8 p.m.	Grading, curbing, paving in Imp. Dist. No. 5.	Stuart H. Taylor, City Clerk.
Alabama	Huntsville	Oct. 5, noon	Paving 40,000 sq. yds.; curb and gutter 14,000 ft. Holmes st.	Thomas W. Smith, Mayor.
Ohio	Corlett	Oct. 6, noon	Grading, draining, curbing, paving 2 streets, 1 avenue.	W. H. Jantzen, Village Clerk.
Texas	Texarkana	Oct. 7, noon	Bldg. roads and bridges in Road District No. 1.	N. E. Hughes, County Judge.
Tennessee	Bristol	Oct. 9, noon	Grading and macadamizing 60 miles of road.	John H. Caldwell, Chm. Co. Comrs.
Alabama	Huntsville	Oct. 19, noon	Paving, curb, gutter, sidewalks on Eustis street.	Thomas W. Smith, Mayor.
WATER SUPPLY				
Louisiana	New Orleans	Sept. 25, 11 a.m.	Constructing 50,000 and 20,000-gal. water tanks.	Bureau of Yards and Docks, Navy Dept., Washington, D. C.
New Jersey	Avon-by-the-Sea	Sept. 27, noon	Extending water system distance of 6,100 feet.	Leon R. Taylor, Boro. Clerk.
Iowa	Seymour	Sept. 27, noon	Pumping machinery, c. i. pipe, hydrants, valves, specials, etc.	E. W. Smith, City Clerk.
Ohio	Cincinnati	Sept. 27, noon	Furn. c. i. pipe and specials for distribution system.	John J. Wenner, Clk. Bd. Pub. Serv.
Ohio	Sandusky	Sept. 29, noon	Furn. duplex compound condensing Worthington pumping engine to raise 3,000,000 gals. 200 ft. in 24 hours.	J. F. Leser, Pres. Bd. Pub. Service.
Colorado	Eagle	Sept. 30, 7 p.m.	Material and labor for gravity water works system, inc. 3,100 ft. 8-in. and 40,300 ft. 6-in. machine bonded wood pipe, pipe, castings, 18 double nozzle fire hydrants, valves, 80x20x10 ft., rein. concrete distributing reservoir, etc.	L. R. Thomas, Town Clerk.
Kentucky	Madisonville	Sept. 30, noon	For water works franchise.	James L. Brown, City Clerk.
Illinois	Rock Island	Sept. 30, noon	Bldg. new filter plant on bluff site.	M. T. Rudgren, City Clerk.
New York	Albany	Sept. 30, 3 p.m.	Furn. and delivering c. i. water pipe and specials.	I. Wachsmann, Sec'y Bd. Cm. & Supply
Maryland	Takoma Park	Oct. 1, noon	Constructing \$6,500 filtration plant; enlarging reservoir, \$1,500; installing 200 water meters, \$2,500.	W. G. Platt, Mayor.
Massachusetts	Winthrop	Oct. 2, 8 p.m.	Furn. and erect. 40 x 100 ft. steel standpipe; found. up.	Wesley Tyler, Pres. Water Comrs.
Illinois	Freeburg	Oct. 4, 8 p.m.	Improvement and extension of water works system, 2,600 ft. 4-8-in. c. i. pipe, valves, etc.; steel storage tank, 50,000 gals.	Charles Kessler, Village Clerk.
Oregon	Portland	Oct. 4, 10 a.m.	Bldg. 2 reservoirs, cost, \$618,000; cap. 125,000,000 gals.	D. D. Clark, Engr., Water Board.
Georgia	Marietta	Oct. 5, 8 p.m.	Constructing water works, 1,400 tons 4 to 14-in. c. i. pipe, 67 valves, boxes, etc.; 122 hydrants; rein. concrete or steel stand pipe, 40 ft. diam., 50 ft. high; 1,000,000-gal. comp. pump; engine, 1,500,000-gal. 2-stage cent. pump with 100 h. p. motor; 1,000,000-gal. cent. pump with 75 h. p. motor, 150 k.w. generator, etc.; two 500,000-gal. rein. concrete filters; rein. concrete clear basin and coagulating basin; 2,000,000-gal. storage basin; small concrete and earth dam, etc.; J. B. McCrary & Co., Engrs., Candler Bldg., Atlanta.	Board of Water Commissioners.
Ontario	Toronto	Oct. 5, noon	Furnishing 1,080 lengths 16-in. c. i. pipe; also 16-in. valves.	Joseph Oliver, Mayor.
Ohio	Bradford	Oct. 6, noon	Furnishing material and constructing water works, complete.	J. A. Crowell, Clk. Trus. Pub. Affrs.
Ontario	Toronto	Oct. 28, noon	Furn. turbine pumps; four 13,500,000-gal. 100 lbs. pressure; two 5,000,000-gal. 300 lbs.; two 10,000,000-gal. 65 lbs. and two 110 lbs.; two 6,500,000-gal., 90 lbs. and two 160 lbs.; two 1,500,000-gal. 65 lbs. and two 110 lbs. pres.; also valves, piping, bed-plates, couplings, etc.	Joseph Oliver, Mayor.
Wyoming	Casper	Oct. 28, 2 p.m.	Bldg. Pathfinder dike, 45 miles s.w.; 160,000 cu. yds. excav.; 8,000 cu. yds. pavement; 2,000 cu. yds. concrete masonry.	U. S. Reclam. Serv., Denver, Col.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
SEWERAGE				
Ohio	Canton	Sept. 24, noon	Constructing sewers, etc., in six streets.	J. Starrett, City Engineer.
Kentucky	Louisville	Sept. 24, noon	Constructing sections B1, B2, C and D of northwestern sewer.	W. C. Nones, Chm. Sewerage Comm.
Virginia	Roanoke	Sept. 25, noon	Constructing two sewers.	W. L. Craft, City Clerk.
New Jersey	Avon-by-the-Sea	Sept. 27	Extending sewerage system 1,400 feet.	J. H. Emblen, Borough Engineer.
North Dakota	Fargo	Sept. 27, 5 p.m.	Bldg. sewers in Dist. 1; 750 ft., 18-in. pipe; 2,270 ft., 12-in. Eight 18-in. Ys; forty-four 12-in. Ys; 26 catch basins.	N. C. Morgan, City Auditor.
Nebraska	Omaha	Sept. 27, 2 p.m.	Sewers in Dists. 394-5 of 24, 18, 17, 10, 8-in. pipe.	George W. Craig, City Engineer.
Ohio	Dayton	Sept. 27, noon	Bldg. storm water sewers; 680 ft. 24-in. vit. pipe; 660 ft. 18-in. 1,700 ft., 15-in.; 700 ft. 12-in.; 8 manholes, 23 inlets.	J. C. Cly, Pres. Bd. Pub. Service.
Dist. Columbia	Washington	Sept. 27, noon	Constructing sewers.	Chief Clerk, D. C. Engr. Dept.
New York	Kingston	Sept. 28, 11 a.m.	Bldg. portion of intercepting sewer; 1,300 ft., 24-in. vit. pipe and driving 6,200 ft. of tunnel in earth and rock.	J. A. Bense, Pres. Bd. W.S., N.Y. City
New York	Brooklyn	Sept. 29, 11 a.m.	Bldg. sewer in Neptune ave. with inter. pump. sta., etc., inc. 6,080 ft. 36-12-in. pipe sewer; 11,600 ft. 12-in. pipe subdrain; 9,000 ft. 6-in. house connections; 46 manholes, 153 stand-pipes, 700 ft. sheeting, etc.	Bird S. Coler, Boro. President.
California	Porterville	Sept. 29	Bldg. main trunk line sewer; cost, \$35,000.	Wm. B. Phillips, City Engineer.
Pennsylvania	Norristown	Sept. 29, 8 p.m.	Bldg. 8-in. vit. pipe sewer, etc., in Cherry and other streets.	S. Cameron Corson, Boro. Engr.
Illinois	Danville	Oct. 1	Sewer improvements to cost \$4,000.	W. E. Weiser, City Engineer.
Missouri	Webb City	Oct. 4, 5 p.m.	Constructing 11,334 ft. main outfall sewer.	A. J. McKenzie, City Engineer.
New Jersey	Trenton	Oct. 5, 8 p.m.	Constructing sewer No. 349 in Howard and Hancock streets.	Abram Swan, City Engineer.
Washington	Mt. Vernon	Oct. 6	Bldg. \$19,000 sewer system; Dunn & Dunn. Seattle, Engrs.	J. S. Brown, City Clerk.
New York	Batavia	Oct. 14 10 a.m.	Bldg. sewer system, Cont. 1, 30 miles sanitary sewer, etc.; No. 2, 4,200 ft. 16-in. c. i. force main; No. 3, pumping well and fittings; No. 4, 4,000 ft. storm water and effluent sewer; No. 5, extending municipal bldg.; also 100 h.p. Corliss engine; 250 h.p. Scotch marine boiler; 3 centrifugal pumps and sundries; Chas. Hoopes, Res. Engr.	Board of Sewer Commissioners.
BRIDGES				
Pennsylvania	Uniontown	Sept. 24, noon	Bldg. 42 1/2 ft. steel span, concrete floor; also stone abutments and wing walls, bridge in Georges twp.	Robt. Powell, Clk., Co. Comrs.
Ohio	Cincinnati	Sept. 24, noon	Constructing bridges and culverts.	Fred. Dreih, Clk. County Comrs.
Ohio	Steubenville	Sept. 25, noon	Constructing bridge No. 22 in Warren township.	County Auditor.
Virginia	Princess Anne	Sept. 27	Bldg. bridge over Blackwater river.	A. E. Kellam, Clk. B. Co. Superv.
Ohio	Hamilton	Sept. 28, 10 a.m.	Bldg. sub. and superstructure, Brown's River, Madison twp.	J. E. Brate, County Auditor.
Massachusetts	Boston	Sept. 28	Bldg. steel bridge over Parker river in town of Newbury.	Harold Parker, Chm. State Hwy. Com.
New York	New York	Sept. 29	Bldg. drip pans under Manhattan approach to Wmsburg bridge.	J. W. Stevenson, Bridge Comr.
Pennsylvania	Reading	Sept. 29, 10 a.m.	Bldg. superstructure of one span steel girder bridge with rein. concrete floor and macadam roadway, etc.	A. L. Rhoads, County Clerk.
Rhode Island	Pawtucket	Sept. 30, noon	Bldg. arch bridge over Blackstone river at No. Main street.	F. B. Lawton, Secy. Bridge Comn.
Illinois	Aurora	Oct. 2, 10 a.m.	Material for 2 through truss iron bridges, 175 ft. each, each span weighing 85 tons.	W. C. Flannigan, City Clerk.
Ontario	Toronto	Oct. 4, noon	Constructing superstructure, 117-ft. arch, two 67-ft. girder spans, two 50-ft. deck girder spans; weight, 500 tons.	Joseph Oliver, Mayor.
Oklahoma	Guthrie	Oct. 4, 10 a.m.	Bldg. 180-ft. span bridge superstructure over creek.	Fred. R. Morgan, County Clerk.
Mississippi	Monticello	Oct. 4	Bldg. 2 steel bridges also steel approaches to bridge.	W. H. Speights, Clk. Bd. Supervisors.
Indiana	Brookville	Oct. 4	Bldg. large concrete arch over Johnson's Fork creek.	C. A. Miller, County Auditor.
Nebraska	Pawnee City	Oct. 5, 11 a.m.	Bldg. 32-ft. I-beam girder bridge at Burchville.	Board of County Commissioners.
Texas	Texarkana	Oct. 7, noon	Bldg. bridges and roads in Dist. No. 1, Bowie County.	A. B. DeLoach, Mayor.
Ohio	Cincinnati	Oct. 11	Bldg. sub. and superstructure, lift bridge over canal.	John J. Wenner, Clk. Bd. Pub. Serv.
New Mexico	Shiprock	Oct. 15, 2 p.m.	Bldg. steel hwy. bridge over San Juan river in S. J. Reservation.	Wm. T. Shelton, Supt. Ind. Reserv.
Louisiana	Natchitoches	Oct. 18, 10 a.m.	Bldg. creosoted pile bridge over Black Lake.	P. E. Prudhomme, Pres. Police Jury.
Louisiana	Tallulah	Nov. 3	Bldg. bridge over Roundaway Bay; 140 ft. long, 16 ft. wide, with 60 ft. span; approaches to be filled.	A. L. Slack, Sec'y Police Jury.
LIGHTING AND POWER				
Rhode Island	Ft. Adams	Sept. 28, 10 a.m.	Remodeling electric lighting system.	Capt. W. C. Metcalf, Q. M.
Delaware	Wilmington	Oct. 5	Furnishing electric lighting, 2 and 5-yr. terms from April 1, 1910, not less than 300 arc and 425 incandescent lights.	Street and Sewer Directors.
Washington	Spokane	Oct. 8, 2 p.m.	Furn. three 5,000,000-gal. multi-stage centrifugal pumps, one 650 h.p. horizontal water wheel, three induction motors, switchboards and connections.	J. T. O'Brien, Secy. Bd. Pub. Wks.
Virginia	Fort Myer	Oct. 13	Electric light system for post, inc. fixtures, etc. for 44 bldgs. and underground or overhead distributing system for grounds.	Capt. W. W. Whitside, Con. Q. M.
Indiana	New Albany	Oct. 20	Lighting streets and alleys by electricity for 10 years from Sept. 1, 1910; \$10,000 check with each bid.	John C. Short, City Clerk.
Ontario	Toronto	Oct. 28, noon	Furn. four 1,500, four 500 and two 225 h.p. synchronous motors; also two 1,500 and four 500 h.p. induction motors, with exciters, switchboards, connecting material, etc.	C. H. Rust, City Engineer.
MISCELLANEOUS				
New York	Buffalo	Sept. 24, 11 a.m.	Bldg. 2-story frame bunk house for fireboat crew; also 2-room portable school house.	F. G. Ward, Comr. Pub. Wks.
New York	White Plains	Sept. 24	Bldg. fire houses for Chatterton and South Side Hose Companies.	Pres. Barnum, Bd. Town Trus.
Kansas	Hutchinson	Sept. 24, 3 p.m.	Sprinkling First ave., east; also Fourth ave. west, for 1 year.	Ed. Metz, City Clerk.
Wisconsin	Greenfield	Sept. 25	Bldg. Town Hall, plans, etc., at Radtke Hardware store.	A. Fry, Chm., Town Hall Com.
Pennsylvania	Altoona	Sept. 30, 5 p.m.	Erecting fire escapes on 5 school buildings.	C. M. Piper, Secy. High School Bldg.
Kentucky	Guthrie	Oct. 1	Furn. and erecting 15-ton ice plant for Todd County Ice & El. Co.	L. M. Balee, Sec'y Ice and Light Co.
Texas	Dickens	Oct. 1, 10 a.m.	Erecting new county jail from bidder's plans.	W. C. Ballard, County Judge.
New York	Albany	Oct. 5, noon	Bldg. 10,32 miles Erie Canal, Cont. 43; also Cont. 2-E.	F. C. Stevens, Supt. Pub. Wks.
New York	Fort Terry	Oct. 8, 10 a.m.	Constructing garbage crematory complete.	Constructing Q. M., U. S. A.
West Virginia	Elkins	Oct. 12	Competitive plans, etc., for new \$30,000 jail building to house 48 persons; also jailer's residence.	S. A. Rowan, Clerk, County Court.

STREET IMPROVEMENTS

Attalla, Ala.—City has decided to lay sidewalks.

Birmingham, Ala.—Council is considering grading, curbing and improvement of five streets.—H. E. Shropshire, Jr., City Clerk.

Dothan, Ala.—Houston County is considering construction of 60 miles of sand and clay roads; cost \$18,000.—J. S. Mickle, County Engineer.

Evergreen, Ala.—Construction of 50 miles of sand and clay roads is being considered; cost \$20,000.—B. B. Finkler, County Engineer.

Gadsden, Ala.—Etowah County will build 15 to 20 miles flag and chert road in near future; cost \$20,000.—J. W. Penn, Judge of Probate.

Huntsville, Ala.—Council has instructed City Attorney Smith to draw up ordinance for paving Eustis and Clinton sts.

Mobile, Ala.—Construction of about 15

miles of chert, gravel and shell roads is being considered; cost \$50,000.—R. B. Stewart, Whistler, County Engineer.

Oneonta, Ala.—Blount County will build 100 miles of chert and limestone road; cost \$100,000.—J. T. Blalock, County Commissioner.

Nashville, Ark.—City is considering paving of portion of Main st.

Oakland, Cal.—City will pave 2d ave. and 4th st.

San Anselmo, Cal.—Citizens have voted \$40,000 bonds to improve roads and culverts.

San Bernardino, Cal.—Council has adopted plans for paving 3d st.; also passed resolution of intention to pave Mt. Vernon st.

San Francisco, Cal.—Board of Public Works has ordered paving of King, Townsend and 2d sts.

San Jose, Cal.—Santa Clara County road will be macadamized.—J. J. McMillan, County Surveyor.

Yuba City, Cal.—Supervisor White has been authorized by Board of Supervisors to get approximate cost of covering floor of Sutter County's portion of the Feather River bridge with asphalt.

Southington, Conn.—Borough officials propose that Summer st. be macadamized within two years.

Waterbury, Conn.—Board of Works has authorized City Engineer R. A. Cairns to advertise for bids for paving Freight st.

Inverness, Fla.—Citrus County is considering construction of 18 miles of rock roads in near future; cost about \$21,000.—Walter F. Warnock, County Clerk.

Jacksonville, Fla.—Council has appropriated \$10,000 for construction of sidewalks and \$600 for repaving portion of Hogan st.—W. S. Jordan, Mayor.

Milton, Fla.—Santa Rosa County will build about 30 miles of sand, clay and gravel roads during year; cost \$60,000.—Curtis Jernigan, Commissioner.

Sumterville, Fla.—Construction of six miles of lime, marl or clay and sand roads is being considered; cost \$4,200.—W. H. Crenshaw, County Clerk.

West Palm Beach, Fla.—County Commissioners have passed resolution ordering election on \$200,000 bonds for good roads.

Cordele, Ga.—Crisp County is considering construction of 150 miles of clay roads; cost about \$7,500.—J. A. Littlejohn, County Clerk.

Folkston, Ga.—Construction of 15 miles of soil and clay road is being considered by Charlton County; cost \$4,500.—J. R. Cooper, County Engineer.

Hartwell, Ga.—Hart County is considering construction of 50 miles of sand and clay road.—S. H. White, County Commissioner.

Homerville, Ga.—Clench County will construct 50 miles of clay and sand roads in near future; cost \$3,000.—W. T. Smith, County Engineer.

Leesburg, Ga.—Construction of 40 miles of dirt road is being considered; cost \$8,000.—J. M. McBride, Lee County Engineer.

Nashville, Ga.—Perrien County is considering \$5,000 expenditure on roads.—S. B. Dornier, Commissioner.

Rome, Ga.—City will pave East 1st st. with vitrified brick; cost \$100,000.

Savannah, Ga.—Chatham County will construct road to Wilmington Island; cost \$20,000.

Swainsboro, Ga.—Emanuel County is considering construction of 100 miles of sand and clay roads; cost \$200,000.—D. D. Brinson, County Engineer.

Thomson, Ga.—McDuffie County is considering construction of 200 miles of sand and clay roads during next 12 months.—Thomas Norris, County Commissioner.

Vienna, Ga.—Construction of about 100 miles of dirt road is being considered by Dooly County; cost \$20,000.—R. E. Kelly, Chairman, Commissioners.

Warrenton, Ga.—Warren County is considering building of about 40 miles of clay and sand gravel road; cost \$100 to \$300 per mile.—Thos. Smith, County Engineer.

Waycross, Ga.—Ware County will build 12 to 20 miles of clay and sand road this year; cost about \$10,000.—B. H. Thomas, Chairman, Commissioners.

Aurora, Ill.—Council has passed ordinance for paving three streets with brick.

Joliet, Ill.—Mayor Cronin is urging paving of more streets.

Streator, Ill.—City will pave Park st.; cost \$18,000.—F. W. Herbert, Engineer.

Streator, Ill.—Board of Local Improvements has passed ordinance for paving South Illinois st. at cost of \$12,405.32.

Bloomington, Ind.—Monroe County Council has appropriated \$12,000 for repairs to roads.

Elwood, Ind.—Council will soon receive bids for grading and graveling 13 streets.

Fort Wayne, Ind.—Board of Public Works has rejected all bids for paving Runion ave.

Hammond, Ind.—Board of Public Works has passed resolution for widening Hickory st.—Adam R. Ebert, Chairman.

Cedar Rapids, Ia.—Council has decided to pave 4th, 5th and 9th aves.

Davenport, Ia.—City is considering repaving of Perry, Harrison and 2d sts.

Lawrence, Kan.—City is considering construction of culverts on Massachusetts and Pennsylvania aves.

Benton, Ky.—Marshall County is considering construction of 15 miles of gravel road; cost about \$3,000.—R. J. Fisher, Road Supervisor.

Carlisle, Ky.—Nicholas County will construct five miles of stone roads during year; cost \$8,750.—John M. Campbell, County Clerk.

Scottsville, Ky.—Allen County is considering construction of about 25 miles of gravel road; cost \$25,000.—W. H. Justice, County Clerk.

Vanceburg, Ky.—Construction of about six miles of limestone rock road is being considered; cost nearly \$12,000.—Ivan W. Sanders, County Engineer.

Franklinton, La.—Police Jury has adopted ordinance to put into effect appropriation of \$100,000 to be expended for good roads in the parish on plans outlined by Governor Sanders; ordinance provides for work to be superintended by State Board of Engineers and labor to be done by convicts from the State penitentiary.

Jennings, La.—Council has passed ordinance providing for construction of concrete sidewalks and curbing on 20 of principal streets, approximating 15 miles.

Lake Providence, La.—Council will at once let contract for four miles of walk.

New Orleans, La.—Council has passed ordinances for banquetting seven streets.

New Orleans, La.—City is considering repaving Esplanade ave. with asphalt; cost about \$28,000.

Baltimore, Md.—State Roads Commission has decided that one mile of highway should be built in Montgomery county in order to test claim of some of its citizens that it is

possible to construct roads there at much less cost than amount expended by Geological Survey.

Everett, Mass.—City has sold \$50,000 street improvement bonds to R. L. Day & Co. at \$101.419.

Grand Rapids, Minn.—Council will pave Kindred ave.; bids will be received at once.

Princeton, Minn.—County Board has appropriated \$4,750 for road and bridge work.

Scranton, Miss.—Board of Supervisors has declared in favor of a bond issue to build 200 miles of public highways in this county.

Vicksburg, Miss.—City has rejected bids for paving Cherry, Harris and Drummond sts.—C. E. Twiss, City Engineer.

Hermann, Mo.—Construction of two miles of macadam and gravel roads is being considered; cost \$5,000.—J. C. Danuser, County Engineer.

St. Joseph, Mo.—Buchanan County will build six miles of macadam road; cost \$30,000.—L. M. Stanard, County Engineer.

Atlantic City, N. J.—City will expend \$100,000 in widening Boardwalk.

Gloucester, N. J.—Fidelity Trust Co., Newark, has secured proposed \$75,000 street improvement bond issue; contracts will be let at once.—A. A. Powell, City Engineer.

Irrington, N. J.—Town Council has decided to grade Washington ave. and to improve five others.—M. Stockman, Town Clerk.

Jersey City, N. J.—Mayor Wittpenn has approved resolution of Street and Water Board providing for paving Garfield ave.; Belgian block pavement will be put down.

Nutley, N. J.—Council has decided to issue \$25,000 bonds for improvement of roads.

Perth Amboy, N. J.—Council has passed first reading ordinance providing \$100,000 bonds for improvement of streets.

Trenton, N. J.—Board of Freeholders will improve eight roads; length, 16 miles; cost \$120,000.

Trenton, N. J.—County Engineer Eppele is preparing general form of specifications for improvement of county roads that will govern bidders on Warrenite, Filbertine and Amiesite compositions; macadam roads in county are in very bad condition.

Buffalo, N. Y.—Taxpayers of Grand Island have voted to spend at least \$5,000 a year on improvement of roads on island; East and West river roads will be improved this year. Address County Engineer Diehl.

Corning, N. Y.—Board of Public Works is planning to pave Erie ave.; will also make boulevard.

Mt. Kisco, N. Y.—Merritt Hill will be cut down so as to prepare it for State highway improvement; cost \$10,000.

New York, N. Y.—Bids will be received Sept. 23, 3 P.M., by the Park Board, for furnishing and delivering Roa Hook gravel or gravel of equal quality on parks and parkways.—Henry Smith, President.

Niagara Falls, N. Y.—Council has ordered macadamizing of Spruce st. and Cedar place at cost of \$16,795.62; also paving of Linwood ave., \$18,307.39, and 10th st., \$45,935.98.

Lexington, N. C.—Lexington Township will vote October 12 on \$100,000 bonds to macadamize roads.

Murphy, N. C.—Construction of about five miles of additional road is being considered; cost nearly \$25,000.

Nashville, N. C.—Nash County will vote October 16 on \$20,000 road improvement bonds.

Rockingham, N. C.—Beaver Dam Township will vote October 12 on \$15,000 road improvement bonds.

Roxboro, N. C.—Person County is considering construction of 20 miles of road; cost \$100,000.—R. S. Hall, County Engineer.

Winton, N. C.—Construction of 20 miles of sand or clay roads is being considered.—A. R. Parker, County Commissioner.

Goodrich, N. D.—City has ordered sidewalks constructed.

Cambridge, O.—Bids received by Commissioners of Guernsey County for grading and macadamizing .76 mile of road in Jackson Township, cost \$4,374, and macadamizing one mile of road in Millwood Township, cost \$8,229, have been rejected and new bids will be asked.—Jas. C. Wonders, Columbus, State Highway Commissioner.

Canton, O.—Board of Trustees of Lake Township has rejected all bids for grading road leading from Ackers school house to Canton and Akron road.

Cincinnati, O.—County Commissioners have adopted resolution to construct county road from Foley road and Fisher ave., Delhi, to Hillside ave.

Cincinnati, O.—Surveyor has notified Board that proposed improvement of road leading from New Haven road to Harrison pike will cost \$2,208.25.

Cleveland, O.—Village of Lakewood has sold \$21,861 paving bonds to First National Bank of Cleveland.

Cleveland, O.—Hayden & Miller have been awarded \$58,993 Ridge road No. 2 bonds, in two issues, one for \$13,243 and the other for \$45,750. Their respective bids were \$278 and \$882.

Dayton, O.—Council is considering paving of three streets and improvement of Belmont st.

Dayton, O.—Street Superintendent McCurdy Huffman has reported that all of \$10,000 will be necessary to repair streets before the cold weather puts a stop to the work.

Dayton, O.—City has sold \$20,000 street improvement bonds to Dayton Savings and Trust Co. at premium of \$76.

Delphos, O.—City has sold \$17,000 street bonds to Barton, Scott & Co. at \$597 premium.

Fremont, O.—City has sold \$25,000 road bonds to Fremont Savings Bank at \$305 premium.

Tiffin, O.—City is considering paving of Market st. with asphalt.—C. J. Peters, City Engineer.

Toledo, O.—Board of Public Service will soon ask for bids for paving portions of Broadway.—Reynold Voit, Secretary.

Toledo, O.—Council has decided to improve three streets.—J. M. Babcock, Clerk.

Toledo, O.—Bids will be received by Board of Public Service September 24 for paving Emerald ave. with either sheet asphalt, vitrified blocks, or creosoted wood blocks, and repaving Broadway with either sheet asphalt, creosoted wood blocks, asphalt blocks, bitulithic pavement or other asphaltic concrete.—Reynold Voit, Secretary.

Youngstown, O.—Bids will be received September 24 by the Board of County Commissioners for grading and macadamizing 1½ miles road in Canfield Township, under the provision of the State Highway law; cost \$18,448.—Jas. C. Wonders, State Highway Commissioner.

El Reno, Okla.—City did not let contract for brick and asphalt paving on Rock Island ave.—F. T. Stackpole, City Clerk.

Madill, Okla.—Marshall County is considering building of 50 miles of road.—J. B. Rybinon, County Engineer.

Portland, Ore.—Executive Board has rejected bids received for hard surface paving on account of bids being all over \$2 a yard, the maximum fixed by the Board, and will readvertise; city will soon advertise for bids for paving a large district on Council Crest; estimated cost \$176,000.

Salem, Ore.—City will pave 12th st. with bitulithic.

Berlin, Pa.—Citizens are considering paving of Main st.

Connellsville, Pa.—Proposed State road from east borough limits to Murphy's siding, distance of 4.6-10 miles, has been approved by State Highway Commissioners and bids will be asked for, so the highway may be completed before winter.

Gallitzin, Pa.—Town Council has rejected all bids for paving and will readvertise.—D. W. Dillman, 47-49 Altoona Trust Bldg., Altoona, Borough Engineer.

Harrisburg, Pa.—City Solicitor Seitz will draw up ordinance authorizing \$100,000 loan for paving street intersections and in front of non-assessable properties.

Harrisburg, Pa.—City Engineer Cowden will prepare general paving ordinance covering all of streets and alleys north of Reilly st. and between 7th and Front.

Olyphant, Pa.—Council will readvertise for bids for paving Delaware and Hudson sts.

Pittsburg, Pa.—Public Works Committee has passed nine ordinances for improvement of streets.

South Sharon, Pa.—Council is considering petition for paving Idaho st.

West Chester, Pa.—John B. Webb, J. C. Noblitt and W. G. Craig, Supervisors of Pennsbury Township, have decided to make public road improvement which, when completed, will give travelers continuous stone road from Chadd's Ford to West Grove or Wilmington, Del.; section to be graded and piked is about 3½ miles in length.

York, Pa.—City is considering paving of Market st.

Camden, S. C.—Kershaw County is considering building of 40 miles of sand and clay road.—M. C. West, County Supervisor.

St. Matthews, S. C.—Calhoun County will construct 100 miles of sand and clay road in near future.—J. L. Zeigler, County Engineer.

Gallatin, Tenn.—Sumter County is considering construction of 10 miles of road; cost \$10,000.—Harris Brown, County Clerk.

Humboldt, Tenn.—Citizens will vote September 30 on \$30,000 additional bonds for street improvements.

Madisonville, Tenn.—Monroe County will consider building of 150 miles of dirt road; cost \$100,000.—J. J. Howard is interested.

Memphis, Tenn.—Bids will be received October 5 for \$581,000 street improvement bonds.—E. M. Douglass, City Register.

Memphis, Tenn.—Macadam road from Little Rock, Ark., to Memphis is being planned by counties the road will traverse; plans to have Cross, Woodruff and Crittenden counties join in creating road dis-

trict, and then, under authority of Patterson act, use convicts to build the road.

Brownwood, Tex.—Brownwood Precinct has sold \$100,000 good road bonds.

Courve, Tex.—Construction of 25 miles of dirt road is being considered; cost \$25,000.—S. A. McCall, Montgomery County Commissioner.

Decatur, Tex.—Wise County is considering construction of 100 miles of gravel and clay roads.—A. Devereux, County Engineer.

Hillsboro, Tex.—Hill County will construct 80 miles of concrete gravel and white rock roads during year; cost \$250,000.—Pebby Harwood, County Clerk.

Henderson, Tex.—Rusk County will construct 50 miles of road this year.—Arthur Hunt, County Surveyor.

Houston, Tex.—Council has decided to issue \$100,000 worth of city bonds for purpose of carrying on system of street improvement; proceeds of issue will be used in extending the system of improved streets in the outlying wards.

Longview, Tex.—Construction of about 25 miles of clay and sand road is being considered.—J. H. Haney, Judge, Gregg County.

Marshall, Tex.—Harrison County is considering construction of 50 miles of clay and sand roads; cost \$10,000.—H. L. Lytleton, County Judge.

Midlothian, Tex.—Midlothian Road Improvement District has voted \$75,000 bond issue for road construction.

Richmond, Tex.—Fort Bend County will cut number of new roads; 75 miles of road will be built.—Clifton Rice, County Engineer.

Waxahachie, Tex.—Midlothian Precinct has defeated proposition to issue \$75,000 bonds for construction of good roads.

Brigham, Utah.—Road Commissioner P. N. Peirce will grade roads in town of East Garland; also install culverts on county roads in Deweyville and Honeyville.

Salt Lake City, Utah.—Bids will be advertised for opening 2d ave.

Salt Lake City, Utah.—Engineering Committee has recommended paving of Sixth South st.

Alexandria, Va.—G. E. Garrett, County Engineer, has completed survey for proposed Alexandria-Washington road; cost about \$47,000.

Bristol, Va.—Washington County will soon issue \$300,000 good road bonds.

Cumberland, Va.—Cumberland County will probably repair dirt and clay roads; cost \$7,000.—C. C. Coonan, County Commissioner.

Fredericksburg, Va.—First permanent road to be built in Spotsylvania county will start at Spotsylvania Court House and run for about 1½ miles down Court House road toward Fredericksburg; road will be built of gravel, will be 12 ft. wide and 8 ins. in thickness and will cost \$2,500.

Houston, Va.—Halifax County is considering construction of 10 to 20 miles gray soil road.—R. S. Barbour, Richmond, Chairman Board of Supervisors.

Houston, Va.—Construction of one or two miles shell road is being considered; cost \$1,000.—A. B. Edmonds, Newport News, County Engineer.

Jonesville, Va.—Lee County will build five miles of limestone road during year; cost about \$12,000.—H. C. T. Ewing, County Clerk.

Lancaster, Va.—Construction of eight miles of sand and clay roads is being considered; cost \$2,400.—W. G. Beane, County Commissioner.

Portsmouth, Va.—Norfolk County will build about 30 miles of macadam road; cost about \$200,000.—Wm. G. Brown, Engineer.

Roanoke, Va.—Crystal Spring Land Co. will construct about 15,000 yds. graded streets, in addition to 50,000 to 75,000 ft. 5-ft. granolithic sidewalks.—T. W. Goodwin, President.

Winchester, Va.—Frederick County is considering construction of two or three miles of road; cost about \$1,500.—Melvin Green is interested.

Kent, Wash.—City will pave Front st. and Meeker ave.

Olympia, Wash.—County Commissioners have ordered construction of new Nisqually hill road on the Olympia-Tacoma highway; road will cost \$3,900.

Seattle, Wash.—Council has passed about 25 street improvement bills.

Spokane, Wash.—Plans are completed for paving with asphalt and brick of Walnut st., an area of 427,350 sq. ft.; estimated cost \$20,300.

Tacoma, Wash.—Council Streets and Alleys Committee has ordered Engineer to make plans for paving with asphalt Yakima ave.; cost over \$100,000.

Tacoma, Wash.—City will pave Commerce st.

Tacoma, Wash.—Metropolitan Park Board has revived project to build 100-ft. boulevard from City Hall to Point Defiance Park.

Tacoma, Wash.—Council will consider

paving of Cliff ave.—W. C. Raleigh, City Engineer.

Clarksburg, W. Va.—Citizens have voted \$270,000 bonds for street paving, sewerage and water works.

Parkersburg, W. Va.—Wood County will build three to five miles of brick road.—C. Skidman, County Engineer.

Wheeling, W. Va.—City and Elm Grove Railway will repave 16th st.

Madison, Wis.—Board of Public Works will prepare plans for improvement of East Washington ave.

Madison, Wis.—Council is considering resolution for asphalt pavement on State, University and Park sts.; improvement of three other streets has been ordered.

BIDS RECEIVED AND CONTRACTS AWARDED

Little Rock, Ark.—Following bids were opened by Board of Public Works September 2 for paving in the Water Cross Street Improvement District: I. P. Shelby, \$102,200 with brick and \$113,160 with creosote blocks; E. J. Wetterstrom, with creosote, \$113,017; W. R. Petty, with brick, \$108,047; Southern Bitulithic Co., with bitulithic, \$115,700; Jos. McCoppin, with brick, \$116,113; H. B. Striechen, with asphalt, \$117,669; Ayer Lord Tie Co., with creosote blocks, \$117,285; and Memphis Asphalt & Paving Co., with asphalt, \$120,989, and brick, \$118,589.

Los Angeles, Cal.—Board of Public Works has opened bids as follows for paving West Adams st.: Fairchild, Gilmore & Wilton, \$96,991, and Barber Asphalt Co., \$100,990.

Pasadena, Cal.—Resolution has passed awarding Michigan ave. contract to J. E. Haddock; Mentor ave. contract to W. C. Doughty, \$4,757, and Los Robles ave. and elsewhere to C. A. Baldwin, \$9,072.

San Bernardino, Cal.—Contract for oil heater was awarded to the Johnson-Shea Co. for \$1,557, or a reduction of \$718 from the original bid of \$2,275, \$507 of which is for the city's boiler, \$90 for the motor, with an additional reduction of \$121.

Denver, Col.—Denver & Pueblo Construction Co., Railroad Bldg., has secured contract to pave Market st., Paving District No. 2, at \$50,651.

Jacksonville, Fla.—The Duval County Board of Commissioners has awarded contract for the construction of a mile of brick paving on each of the Pablo Beach and Kings roads, to the Peninsula Engineering Co., the improvement to cost between \$15,000 and \$20,000. The bids submitted were as follows:

Peninsula Engineering Co.—Fills, per cu. yd., 15c.; cuts per cu. yd., 15c.; paving, No. 2 brick, per cu. yd., \$1.50; concrete curb, per lin. ft., 12c.; concrete curb, flint or crushed rock, 20c.; laying granite curb, per lin. ft., 35c.

Graves-Matthews Co.—Grading, 15c.; cuts, 16c.; paving, \$1.65; coquina curbing, 19½c.; granite curbing, 29½c.

T. D. Griffing—Grading fills, 17c.; cuts, 44c.; coquina curbing, 16c.

Georgia Engineering Co.—Grading fills, 17c.; cuts, 20c.; paving, \$1.71; coquina curbing, 17c.; granite curbing, 35c.

Southern Clay Manufacturing Co.—Fills, 22c.; cuts, 22c.; paving, \$1.63; concrete curbing, 16c.; granite curbing, 35c.

The Board declined to consider the bid of the Logan Coal & Supply Co., owing to the fact that it had been submitted after the hour advertised.

Ocala, Fla.—Contract was let to the Copeland & Inglis Co., of Birmingham, Ala., for paving Magnolia st., at \$1.86 per sq. yd.

Decatur, Ill.—Board of Local Improvements has awarded contracts for paving as follows: To Wineteer & Hall, of Springfield, for West Division, North Warren, North Broadway and Center st., for \$37,519, and to Tuttle & Co., of Decatur, for West Wood, West Macon, McClelland sts. and Fairview ave., for \$30,235.

Madison, Ill.—A. W. Eisenmayer, Granite City, has secured contract for paving Madison ave., at \$83,600.

Pekin, Ill.—Bids for paving South 4th and South 5th sts. were opened, and various kinds of brick, Springfield, Galesburg and Streator, were bid on; the lowest bid of each bidder is herewith given, the amounts being for complete jobs on both streets: E. R. Harding & Co., Racine, Wis., \$48,251.60; Illinois Cement Construction Co., Springfield, Ill., \$47,535.40; John Striffler, Springfield, \$47,156.80; Nelsh & Egan, Springfield, \$47,021.80; A. B. Thompson, Peoria, \$45,261.60.

The bids in detail, giving prices on the different kinds of brick, were as follows: A. B. Thompson, Peoria, 4th and 5th sts.: Springfield brick, \$1.58; Streator brick, \$1.68; Galesburg brick, \$1.69; new curbing, 23c.; protection curbing, 23c.; resetting curbing, 8c.

Nelsh & Egan, Springfield, 4th and 5th sts.: Galesburg brick, \$1.67; Streator brick, \$1.67; Springfield brick, \$1.64; new curbing,

25c.; protection curbing, 10c.; resetting curbing, 10c.

J. R. Striffler, Springfield, 4th and 5th sts.: Springfield brick, \$1.64; Streator brick, \$1.70½; Galesburg brick, \$1.71¼; new curbing, 25c.; protection curbing, 25c.; resetting old curbing, 10c.

Illinois Cement Construction Co., Springfield, 4th and 5th sts.: Galesburg brick, \$1.70; Streator brick, \$1.67; new curbing, 22c.; protection curbing, 20c.; resetting curbing, 10c.

E. R. Harding, Racine, Wis., 4th and 5th sts.: Streator brick, \$1.68; Galesburg brick, \$1.75; new curbing, 25c.; protection curbing, 20c.; resetting old curbing, 15c.

Indianapolis, Ind.—A contract for building the embankment for a boulevard along the north bank of Fall Creek from 23d to Illinois sts. was awarded by the Board of Park Commissioners to W. F. Nugent & Brothers, of Louisville, Ky., the third lowest bidder; the bids were by the cubic foot of earth to be removed and filled, and that of the successful bidder was approximately \$21,312; the Board called in the three lowest bidders, M. M. Defrees, R. F. Pickens and a representative of W. F. Nugent & Bros., and each was asked as to his equipment and probable ability to complete the work by April 1, the date which will be named in the contract. Defrees, who bid approximately \$19,578, and Pickens, who bid \$20,107.48, both expressed opinions that they could complete the work on time. Defrees said he was partially equipped, but could add more equipment later; Pickens said he had no equipment, but would buy an outfit if awarded the contract and could start in about one month. The Nugent Co. said it was prepared to begin work within 15 days and could move from 700 to 1,000 yards of earth a day, irrespective of the weather.

Indianapolis, Ind.—Following are the lowest bids received by the Board of Public Works, Blaine H. Miller, City Engineer: 29th st. from Central ave. to Broadway, A. D. Bowen, \$1.19, paved; Ruckle st. from 28th to 30th st., cement walks and curb, Lackey Bros., \$1.05; Park ave. from 29th to 30th st., cement walks and curb, John Arnold, \$1.03; College ave. from Highland drive to 42d st., cement walks, J. E. Sullivan, 59c.; 42d st. from Central ave. to College ave., cement walks, Marion Caldwell, 65c.; Highland drive from Central ave. to College ave., cement walk and curb, Marion Caldwell and John Arnold, each \$1.33; Park ave. from 29th to 30th, sidewalks, J. D. Hoss, \$1.21.

Terre Haute, Ind.—Contracts for the construction of the Faggs and Felling roads in Lost Creek Township were awarded by the Commissioners to James Robertson and Holmes & Lour for \$2,950 and \$2,940, respectively.

Atlantic, Ia.—Following bids have been opened by Council for 23,000 sq. yds. brick paving, 7,600 lin. ft. combined curb and gutter: Independent Construction Co., with Capital brick, \$49,938, with Purington brick, \$53,413; Cook Construction Co., \$49,599; Cedar Rapids Construction Co., \$48,702; Jas. Horrabin, \$54,870; M. Ford, with Purington brick, \$51,949, and Capital brick, \$49,633, and Hamilton-Swartz Co., with Purington, \$54,055, and Capital brick, \$49,424.

Davenport, Ia.—The McCarthy Improvement Co. was low bidder on the Davie st. paving and will get the job; the bids follow: Davie st.: McCarthy Improvement Co., excavation, 38c.; brick paving, \$1.46; curb, 30c.; Davenport Construction Co., excavation, 45c.; brick paving, \$1.72; curb, 35c.

Iowa, between 11th and alley: Hydraulic Concrete Construction Co., 54c. per ft.; P. Connelly, 67c. per ft.; Lloyd & Co., 69c. per ft.

Alley: Hydraulic Concrete Construction Co., 93c. per ft.; P. Connelly, 79c. per ft.; Lloyd & Co., 63c. per ft.; Davenport Construction Co., 65c. per ft.

Grinnell, Ia.—Wm. Torrabin, of Iowa City, has secured contract for paving with bitulithic about 22,000 sq. yds. in Grinnell at \$2.13 per sq. yd.

Oskaloosa, Ia.—Magdient Sheely Co., Kansas City, Mo., has secured the contract for constructing half mile of paving for \$11,406.

Danville, Ky.—Boyle County has awarded contract for construction of five miles of road.

Bemidji, Minn.—William Lennon, of Kelliher, was the successful bidder for the construction of an extension of 3¼ miles of road on the west end of the Kelliher-Battle River road; John Carlson was awarded the contract for a two-mile extension of the Cormant-Battle River road.

Mankato, Minn.—Board of Public Works has awarded contract for paving a portion of Jackson st. with tar macadam to Fowler & Fay, at \$1.05 per sq. yd.

Greenwood, Miss.—Council has let contract for nearly five miles of sidewalks and crossings to the Oxford Concrete Construction Co. at 10c. per sq. ft. for sidewalks and 15c. for crossings.

Concord, N. H.—Bids were opened September 14 at the office of State Engineer A. W. Dean for the construction of sections of

the various State highways. C. A. Bailey, of Suncook, was awarded the contract to build the section from Hooksett to the Manchester line; John A. Gafney, of Medford, Mass., will build the new road in Rye, which will, in part, form the ocean boulevard, and Irving W. Brown, of Rye, has the contract to build the seawall to protect the boulevard.

Bayonne, N. J.—Council has awarded contracts for paving as follows: Uvalde Asphalt Paving Co., 2 Greene st., Jersey City, for portions of 16th, 25th, 27th, 45th and 46th sts., at \$69,415, and to Filbert Paving Co., for 37th st., at \$16,664.

Jersey City, N. J.—Henry Byrne has been awarded contract for improvement of Garfield ave. and J. F. Shanley & Co. contracts for the improvement of Maple st. from Pine to Garabrant st. and Terhune ave. from the Boulevard to Spring st.

Kearny, N. J.—The John F. Shanley Co. of Newark, has been given contract to pave Maple st. with McAvoy brick; there were six other bidders.

Paterson, N. J.—The Board of Freeholders has awarded contracts for the painting of 35 bridges throughout the county, the total cost of the work, as based on the lowest bids, being \$1,252.50; of these Gustav Specht received the contract for 16 bridges, J. W. Holmes for six, G. W. Mead for six, F. A. Penberthy for four and F. C. Vanderhoff for three.

Summit, N. J.—The lowest proposal for grading at new school building was submitted by Michael Garafano, city, his bid being \$1,800; Garafano's proposal for the entire work of grading, curbing and sidewalk construction was \$2,673.40. John Fitzpatrick, city, submitted a bid of \$3,231.10 for grading, curbing and sidewalk construction.

Buffalo, N. Y.—The German Rock Asphalt & Cement Co. was the lowest bidder on three pieces of paving work, according to bids opened in the Department of Public Works; for repaving Clinton st. the company bid \$15,710; for paving Glendhu ave. from Cazenovia ave. its bid was \$2,517, and for repaving Auburn ave., \$17,830.

Herkimer, N. Y.—Contract for paving Eastern ave. has been awarded to James W. Johnson, Bleeker st., Utica, for \$6,186.—Wm. Wright, Jr., City Clerk.

New York, N. Y.—Bids were opened September 7 by President of Bronx Borough for regulating, grading, setting curbstones, flagging sidewalks, laying crosswalks, building approaches and placing fences in Gun Hill road, from Jerome ave. to Moshulu Parkway; totals of the bids received were: F. G. Palmer, \$16,984; B. C. Marsch, \$17,021; Wakefield Construction Co., \$12,292; Perillo & Sheil, \$13,572; J. B. Malatesta, \$16,9 Jerome ave., \$9,946; and the detailed bid of the lowest bidder, J. B. Malatesta, on some of the items is as follows: 8,700 cu. yds. of earth excavation, 27c.; 2,600 cu. yds. of rock excavation, \$1.25; 2,400 lin. ft. of new curbstone, furnished and set, 65c.; 9,150 sq. ft. of new flagging, furnished and laid, 23c.; 1,325 sq. ft. of new bridgestone, for crosswalks, furnished and laid, 42c.

Bids were opened same time and place for paving with asphalt blocks on a concrete foundation and with granite blocks on a sand foundation, Jennings st. from Stebbins ave. to West Farms road, and setting curb where necessary; bids were as follows: Barber Asphalt Paving Co., \$26,130; Hastings Pavement Co., 25 Broad st., \$26,117. The detailed bid of the Hastings Pavement Co., the lowest bidder, was as follows: 2,695 sq. yds. asphalt block, five-year maintenance, \$1.80; 598 cu. yds. concrete, including mortar bed, \$6.60; 500 lin. ft. new curbstone, furnished and set in concrete, \$1.05; 3,945 lin. ft. old curbstone, re-jointed, recut on top and reset in concrete, 38c.; 2,270 sq. ft. of old bridgestone, re-jointed and relaid, 20c.; 5,135 sq. yds. granite block pavement, one-year maintenance, \$2.96; also for 5,250 sq. ft. flagging on Burnett place, and that D. W. Moran, 562 Burnside ave., bid \$3,534 for this work.

New York, N. Y.—Contracts for paving in Manhattan Borough were awarded as follows: With sheet asphalt, Christopher st., Sicilian Asphalt Paving Co., 41 Park Row, \$11,613.10; sheet asphalt, Morton st., Uvalde Asphalt Paving Co., 1 Broadway, \$12,607; sheet asphalt, Charlton st., Sicilian Asphalt Paving Co., \$14,699; sheet asphalt, Vandam st., Uvalde Asphalt Paving Co., \$5,093; sheet asphalt, West 38th st., Sicilian Asphalt Paving Co., \$7,643; asphalt block, Ft. Washington ave., Harlem Construction Co., 2 Rector st., \$77,945; asphalt block, Jumel place, Harlem Construction Co., \$7,356; wood block, Lewis st., United States Wood Preserving Co., 165 Broadway, \$7,985; for regulating and repaving with wood block pavement on concrete foundation the roadway of Cannon st. from the north side of Rivington st. to the south side of Houston st., lowest bidder was the United States Wood Preserving Co., \$9,885.75; wood block, 2d ave. from the north side of 23d st. to the north side of 37th st. and from the

south side of 48th st. to the north side of 53d st., United States Wood Preserving Co., \$97,711.50; granite block, Desbrosses st., W. T. Fitzgerald, \$9,649; granite block, Gansevoort st., Rafferty Bros., 624 West 25th st., \$17,619; granite block, Walker st., Rafferty Bros., \$14,542; granite block, New Chambers st., Rafferty Bros., \$27,869; granite block, 2d ave., from the north side of 45th st. to the south side of 48th st., Rafferty Bros., \$13,200; flagging and paving with granite block, West 149th st., Atlantic Contracting Co., \$5,633.

Bids opened same time and place for asphalt block on Madison ave., 98th, 118th sts. and 2d ave. between 37th and 45th and 53d and 58th sts. were rejected.

Winston-Salem, N. C.—The Atlantic Bitulithic Co., of Norfolk, Va., has been awarded the contract for paving Spruce and Cherry sts., 36,000 sq. yds., at \$2.25 per yd.; this makes the fourth contract this company has secured in Winston-Salem, aggregating about \$200,000.

Yanceyville, N. C.—Caswell County Macadam Road Co. has awarded contract to S. G. Woods to construct first five miles of road from North Carolina line near Gatewood to Yanceyville.—Julian Hall, Engineer in Charge.

Akron, O.—Bids on several improvements were opened by the Service Board; H. J. Petley was lowest bidder on the Cuyahoga Falls ave. sewer at \$831.75; E. McShaffrey's bid of \$1,361.30 was low on the Kelly ave. paving; for Raymond ave. Matthew McCourt's bid of \$2,289 was low, and Dan O'Marr was low on the Washington st. and Clark st. paving and McCourt for Oak Court paving. The respective bids were \$16,700, \$3,842.70 and \$1,212.60.

Cadiz, O.—Bids were opened by Commissioners of Harrison County September 9 for grading and macadamizing 1.23 miles of road in Franklin Township, under provisions of State highway law, estimated cost \$10,858; following were bids received: (a) water-bound macadam, (b) macadam tarvia X; J. P. Warnick, Cadiz, (a) \$9,540, awarded contract, (b) \$12,040; Edward A. McCollam, Ulrichsville, (a) \$9,960; R. L. Timmons, Cadiz, (a) \$10,501.27, (b) \$12,668.02.—Jas. C. Wonders, State Highway Commissioner.

Cambridge, O.—Bids were received by Commissioners of Guernsey County September 8 for improving State Highways B and C, Quaker City, and Salesville road, and the Cambridge and Bylesville road. Bids were rejected and will be readvertised.

Contract for improving State Highway D, Coshocton road, has been awarded to Turner & Luce, of Newcomerstown, O., at their bid of \$7,605 for brick road and water bound macadam.

Cincinnati, O.—Eight contractors bid on the contract for a culvert under a bridge on the West Miami River road near Miami town, in Crosby Township; cost \$3,378; on a rough computation Contractors William Harrell & Co. appear to be low. On the contract for oiling the Reading pike the Indian Refining Co. again underbid the Standard Oil Co.; estimate, \$2,418; the Indian Refining Co. offered to furnish the oil for 2.75c. per sq. yd., while the Standard Oil Co. bid 2.85c. Four other minor contracts were awarded by the Commissioners.

Cincinnati, O.—Board of Public Service has awarded contracts for paving as follows: Enright ave., with brick, to J. M. Quill, \$8,780; Hanfield st., to A. J. Henkel, \$12,994; Boudinot ave., to Logan & Caruso, \$16,647, and Linden st., to John Ruebel & Bros., Atlas Bank Bldg., \$13,318.

County Commissioners have awarded contract for improving Springfield pike through Wyoming to Geo. Leonard for \$20,972.

Columbus, O.—Public Service Directors, September 10, awarded contracts for street paving aggregating \$50,000, as follows: Oakley ave., Broad to Steele, D. E. Sullivan & Son, \$8,623.20; Brust st., Beck to Sycamore, W. M. Graham, \$2,518; Loeffler ave., Bryden road to Main, W. E. Schwartz, \$4,043.20; alley north of Spruce st., Wall to Chicopee, W. M. Graham, \$144.50; Bryden road, Miller to Morrison, A. G. Pugh, \$10,614; Center st., Broad to Town, W. M. Graham, \$9,349.50; Courtland ave., South Terminus to 7th ave., H. J. Shaw, \$5,815; Cozzins st., Spring to Dublin, H. J. Shaw, \$4,411; Hayes ave., Atcheson to north corporation line, W. E. Schwartz, \$6,629, and Wall st., Spruce to Goodale, W. M. Graham, \$1,553.

Fayette, O.—Contract for furnishing material and constructing about 6,400 sq. yds. of vitrified or other block pavement, bids opened September 10, has been awarded to M. F. O'Sullivan, 145 Oak st., Toledo, at \$13,000.

Toledo, O.—R. C. Roach has been given contract for improvement of Reynolds road by County Commissioners. Roach's bid called for laying macadam road at rate of \$17 a rod and 15c. per yd. for grading. Road is about one mile long through Adams Township.

Toledo, O.—Joseph W. McMahon was

awarded contract for the improvement of the Corduroy road in Oregon Township by the County Commissioners, at approximately \$21,000; there were seven other bidders; the road is to be improved with stone and screenings of macadam material.

Zanesville, O.—Bids were opened by Commissioners of Muskingum County September 7 for paving with brick 1.3 miles of road in Wayne Township, under provisions of the State highway law, estimated cost \$15,628, and the bids received were as follows: (a) Harris brick, (b) Townsend brick, foundation rolled stone or gravel, unless otherwise stated; (bidders of Zanesville, unless otherwise stated): J. E. Brown, (a) \$15,000, (b) \$15,600; J. C. Williams, (a) and (b), concrete, \$15,532; gravel, \$14,369; Petit & Able, (a) \$14,350; (b) \$14,300, awarded contract; T. B. Townsend Brick and Contracting Co., (b) \$14,625; John S. Woodrow & Chas. W. Fisher (a) \$15,000, (b) \$15,506; L. T. Cisler, Marietta, \$15,220.—Jas. C. Wonders, State Highway Commissioner.

The Dalles, Ore.—Council has awarded contract for paving a portion of 2d st. to Warren Construction Co., at \$2.03 per sq. yd.

Canonsburg, Pa.—Town Council has awarded a contract for the paving with vitrified brick on concrete of North Jefferson ave. and Bluff st. to Maynard & Flinn, of Pittsburgh, at a cost of \$7,449; work will begin immediately; other bidders were: Hallam Construction Co., of Washington, \$7,718.50; John McNary, Canonsburg, \$7,682; D. E. Sullivan, New Castle, \$7,884.—J. M. Farmer, Borough Engineer.

Clairton, Pa.—Contract to pave Holcomb ave. has been awarded to Parnham & Coleman; about 2,360 sq. yds. to be paved and 2,200 lin. ft. of curbing.—H. M. Gates, Borough Clerk.

Harrisburg, Pa.—The State Highway Department has awarded contracts for three sections of new roads: two will be built in Clearfield county, at Curwensville and in Pike Township, by Reed & Patton, of Curwensville; the other section, in Wellsboro, Tioga county, by W. H. Lyon, of Sunbury.

Harrisburg, Pa.—The State Highway Department has awarded contract for building one mile of good road in Union Township, Adams county, to W. B. Johnson, of Spring Grove.

Mechanicsburg, Pa.—Town Council has awarded contract for furnishing stone for street improvement to C. N. Owen of that place for \$1.09 per perch; not less than 70 perch must be delivered each day; bids for furnishing stone were as follows: C. N. Owen & Son, \$1.09 per perch; C. Martin & Son, \$1.12 per perch; Clarence D. Stoner, of Columbia, \$1.10 per perch.

Washington, Pa.—Contracts were awarded by the County Commissioners September 9 for several stretches of road, for which bids were opened on September 1. Contract for the Monongahela-Donora road, a distance of two miles and 200 ft., which is to be of brick, was let to Thomas Sweeney & Co., at \$33,328.20; the Houston-Canonsburg road, a distance of 2,970 ft., was let to Abbott & Myers for \$9,537.70. This road is also to be of brick. The Washington-Meadowlands road, from McLain's bridge to Meadowlands, one mile, was let to the Hallam Construction Co., at \$11,642.80. The improvement of the Monongahela pike, the Ginger Hill section, from the Annie George farm to Ginger Hill, one mile and 120 ft., was let to the Donora Construction Co., at \$13,039.50. The Monongahela pike, Eighty-four section, from Clokeyville to William Foulk's farm, a distance of two miles and 200 ft., was let to N. C. Hunter, at \$18,593.30. The Claysville-Prosperity road, from Claysville to the Sawhill school house, a distance of two miles and 1,500 ft., was let to Neelen & Daley, at \$22,204.50. The following are the bidders and their respective bids on each of the roads:

Ginger Hill—Donora Construction Co., \$13,039.50; Forsythe Bros., \$13,380.80; Wm. Howley & Co., \$13,425.60; N. C. Hunter, \$15,487.20; Hallam Construction Co., \$15,540.80.

Eighty-four—N. C. Hunter, \$18,593.30; Thomas Sweeney & Co., \$18,632.95; Hallam Construction Co., \$18,713.20; J. R. Taylor, \$19,368.20; William Howley & Co., \$20,374.40; Neelen & Daley, \$20,616.50; William Pickett & Co., \$22,438.10; Reitsch Bros., \$24,851.40.

Claysville—Neelen & Daley, \$22,204.50; C. M. Driver, \$22,942.50; Hallam Construction Co., \$26,067; N. C. Hunter, \$26,341.50.

Washington-Meadowlands—Hallam Construction Co., \$11,542.80; J. R. Taylor, \$11,722.60; William Pickett & Co., \$13,625.50.

Houston-Canonsburg—Abbott & Myers, \$9,537.70; Hallam Construction Co., \$11,486.20; John McNary, \$11,557.60; Wm. Pickett & Co., \$12,590.45; N. C. Hunter, \$12,624.35; Reitsch Bros., \$15,167.85.

Donora-Monongahela—Thos. Sweeney & Co., \$33,328.20; F. J. Erbeck, \$34,313.20; James Nixon, \$35,511.80; Donora Construction Co., \$37,112.70; C. M. Driver, \$37,442.20; Michael O'Herron, \$38,352.20; McCurdy & Co., \$38,680.70; A. G. Rothey & Co., \$39,-

SEWERAGE

063.20; Thomas Arrigo, \$40,284.70; William Howley, \$42,297.20; W. H. Murdoch, \$43,364.20; Robert Weir, Jr., \$48,052.20; Hastings & Piper, \$48,004.07; Hallam Construction Co., \$48,640.70; N. C. Hunter, \$50,506.20.

The Houston-Canonsburg and Donora-Monongahela roads are the only ones that are to be of brick, the others being macadam. The roadway to be improved amounts to about ten miles. Four sections will be of macadam, while two will be improved with brick, the brick to be 10 ft. wide with 3 ft. of stone on each side. One requirement this year is that the stone shall be measured in the wagons, two-thirds of the amount to be paid for, the other one-third being deducted for compression.

Providence, R. I.—The contract for surfacing with asphalt Washington st. from Empire to Dorrance, and Dorrance st. from Fulton to Washington, was awarded by the Board of Contract and Supply to the Narragansett Improvement Co., city, with a bid of \$1.60 per sq. yd. for Bermudez asphalt; there is about 7,000 yards of surface to be asphalted; other bids were: Warren Brothers Co., Boston, \$1.72, and Southern New England Paving Co., \$1.78.

Providence, R. I.—The State Board of Public Roads has contracted for an additional three miles of new road connecting with the section just completed over Nooseneck Hill, in West Greenwich, to the 10-rod road leading to Exeter, to the Bristow Construction Co., builders of the section already completed, and of sections of State road in Coventry; this company was also awarded contract for a section of road to be built by the State in Warwick from the Royal Mills at Riverpoint to the Coventry town line at Andrew's bridge, Quidnick st. and Warwick ave.

Morristown, Tenn.—Freeman Bros. & Roberts, of Knoxville, secured the contract to construct the pike roads in Hamblen County, contract calling for \$225,000 worth of work; other bidders upon the work was the Kreis Construction Company, R. L. Peters, J. W. Wright, O'Connor & Mann, and several others; work will commence at once.

Dallas, Tex.—Covering several downtown streets, a contract has been awarded for paving with vit. blocks to the Texas Bitulithic Company, which is to use blocks from Coffeyville, Kan.; the bid was for \$2.52 a square yard, with a six-inch gravel concrete base and asphalt filler. The price was not the lowest offered, but the lowest bidder could not get the blocks in less time than six months from the Thurber plant; another bidder offered to do the paving in ninety days, using Thurber paving blocks, but asked a premium of \$3,180; the bids of the Texas Bitulithic Company and of the Ockander Brothers were identical; that of the General Supply and Construction Company differed in some respects above and below, but is 3c. lower on the Coffeyville block with gravel concrete base and asphalt filler.

Salt Lake City, Utah.—The contract for curb and gutter extension No. 12, on McClellan ave., between First South and Second South sts., was awarded to H. G. Glickerson at \$1,795.36, as against the City Engineer's estimate of \$1,827.33; other bids were: J. D. Hanley, \$1,856.18; McKay & Read, \$2,193.12. H. G. Glickerson also received the contract for curb and gutter extension No. 11, on Dunbar ave., between First South and Second South sts., for \$2,986.09; the City Engineer's estimate was \$3,124.24; other bids for the work were: J. D. Hanley, \$3,118.47; McKay & Read, \$3,089.89.

Newport News, Va.—City has awarded contract to R. H. Richardson & Son, of Hampton, for street paving; cost \$100,000.

Bellingham, Wash.—Board Public Works has awarded contract for paving, with asphalt, a portion of Young st. to C. G. Byrnet for \$6,000.

Mount Vernon, Wash.—Bids have been opened for constructing the W. V. Wells road around Marches Point; distance 12,900 ft.; contract has been awarded to W. S. Stevens at \$2,900.—J. M. Shields, County Auditor.

Seattle, Wash.—The contract for paving with brick 3d ave. was awarded to Holt & Jeffrey for \$30,270.90, and that for the asphalt paving of Vine st. and others to the Independent Asphalt Paving Co., at \$63,499.20.

Milwaukee, Wis.—Board of Public Works has let contracts for brick paving as follows: Lapham st., W. T. McGovern; Prairie st. and Port Washington rd., Bacheller & Powell; Fourth st. and Central ave., Badger Construction Co.

Milwaukee, Wis.—The White Construction Company has secured contract for paving with asphalt National ave. at \$2.70 per sq. yd.

Superior, Wis.—Board Public Works has awarded contract for paving with macadam 17th st. to Russell Construction Company for \$8,000.

East San Jose, Cal.—Citizens will vote October 5 on \$60,000 bonds for installation of sewer system.

Oakland, Cal.—Council has adopted resolutions of intentions for resewering three streets.

San Bernardino, Cal.—City Engineer Sloan has prepared plans for proposed storm drain on Mt. Vernon ave.

San Leandro, Cal.—Trustees will construct sewer through center of town; \$13,000 is available.

Holly, Col.—W. K. Palmer Co., Kansas City, Mo., has been engaged as engineer for proposed sewer system.

Atlanta, Ga.—Citizens will vote December 15 on \$1,500,000 bonds for sewers.

Cuthbert, Ga.—Citizens will vote October 12 on bonds for construction of sanitary sewers.

St. Maries, Ida.—City will install trunk sewer and laterals.

Canton, Ill.—A. T. Maltby, 803 Great Northern Bldg., Chicago, has prepared preliminary report recommending system of storm sewers, two main sanitary sewers and a sewage disposal works.

St. Charles, Ill.—Council has empowered Board of Local Improvements to prepare plans for complete sewer system.—F. B. Hunt, Mayor.

Greencastle, Ind.—Council has accepted plans for a sewer system.—Riggs & Sherman, of Toledo, Engineers.

South Bend, Ind.—Board of Public Works is receiving bids for construction of local sewers in six streets.

Seymour, Ia.—Citizens have voted \$35,000 bonds for sewers and water works.

Lafayette, La.—Council is considering installation of sewerage system.

Malden, Mass.—City has sold \$30,000 sewer bonds to E. H. Rollins & Sons at \$109.81.

Milford, Mass.—Sewer Commissioners have rejected all bids for constructing 6,000 ft. of sewer pipe; James D. Kelley, Dorchester, at \$9.162, lowest bidder.

New Bedford, Mass.—City Engineer will study problem of abolition of sewage nuisance in Clark's Cove; cost about \$300,000; intercepting sewer system may be built.

Quincy, Mass.—Council is considering installation of sewerage system and sewage disposal plant at Hough's Neck and Germantown.

Salem, Mass.—Residents of Juniper Point have petitioned Council for sewer to be put in at estimated cost of \$15,000.

Red Wing, Minn.—Lutheran Ladies' Seminary has petitioned for immediate construction of West End trunk sewer system.

Wilmar, Minn.—Council will soon start construction work on proposed sewer system.

Glasgow, Mo.—Plans are being prepared by Engineers Burns & McDonnell, Kansas City, for sewers.

Walkerville, Mont.—Council will receive bids on sewer system along Toboggan ave.

Newark, N. J.—Board of Works is considering construction of two important sewers, one in Vailsburg section and one in southern end of the city, near Weequahic Park; Vailsburg drainage system, to be constructed jointly with East Orange, is largest piece of work under consideration, plans, to be completed this fall, calling for an outlay of \$250,000.

Newark, N. J.—Board of Street and Water Commissioners has ordered construction of sewers in two streets.—Wm. E. Greathead, Clerk.

Perth Amboy, N. J.—Board of Aldermen is considering petition for extension of Water st. sewer.

Salem, N. J.—Salem Board of Health has issued notice that every property along line of sewer must be connected or action will be taken against property owner.

Trenton, N. J.—Council has ordered sewers constructed in West End and Hoffman aves.—H. B. Salter, City Clerk.

Trenton, N. J.—Board of Park Commissioners will alter entire drainage system of Cadwalader Park to make it more modern.

Pelham, N. Y.—Sewage disposal plants will be constructed at cost of \$55,000.

Syracuse, N. Y.—Council has adopted ordinance for construction of 15-in. pipe sewer in three streets and 12-in. pipe sewer in Clarendon ave.

Waverly, N. Y.—Williams, Proctor & Potts, 17 Battery place, New York, have prepared plans for sewage disposal plant and system of sewers; total cost \$150,000.

Akron, O.—Main trunk sewer is to be extended 3,000 ft. north in the Cuyahoga valley; cost will be \$6,000.

Dayton, O.—Council is considering ordinance to sell \$1,400 bonds for storm sewer on Richmond ave.

Dayton, O.—Service Board has ordered bids advertised for storm sewers in Hartford and Costello sts.

Girard, O.—Council has decided to postpone building sanitary sewer until spring; all bids have been rejected.

Sebring, O.—Council will sell \$25,000 sanitary sewer and disposal plant bonds.

Tiffin, O.—Council has passed resolution to construct a sewer in District No. 19.—Jos. A. Arnold, Mayor.

Toledo, O.—Council has decided to construct local sewer No. 1086.—J. M. Babcock, Clerk.

Youngstown, O.—City has awarded \$164,435 sewer and street bonds to Otis & Hough at \$720.50 premium.

Salem, Ore.—Council has decided to construct sewer through block 9 and across Trade st.

Harrisburg, Pa.—Council will consider ordinance authorizing \$100,000 loan for sewers.

Olyphant, Pa.—Council will ask for bids on Dunmore and Gravity st. sewers.

Phoenixville, Pa.—D. W. Bowman has made proposition to Council for sewerage southern section of town.

Rochester, Pa.—Borough plans extensive changes in sewerage system.

Woonsocket, R. I.—Joint Standing Committee has recommended laying of new sewers on two streets; cost about \$1,450.

Dallas, Tex.—City Secretary will advertise for bids for laying 6-in. sewer on Phelps st. and 8-in. sewer on three streets.

Galveston, Tex.—Authority has been granted to advertise for bids for constructing drain in southwestern part of the city from near forts; proposed box drain is to be built along 45th st. from ave. M½ to ave. O; thence along ave. O to 43d st.; thence along 43d st. to north line of ave. T½; estimated cost is \$11,036.25.

Lufkin, Tex.—Council has decided that city should aid in construction of an extension to the sewer system, reaching from the business portion to resident section.

Petersburg, Va.—Board of Aldermen is considering construction of sewer on West st.; cost \$13,457.

Roanoke, Va.—Citizens will vote December 11 on \$70,000 bonds for improvement of sewer system.

Tacoma, Wash.—City Engineer W. C. Raleigh has estimated that about \$20,000 will be required to extend needed sewer lines.

Clarksburg, W. Va.—Citizens have voted \$270,000 bonds for sewerage, street paving and water works.

Kingwood, W. Va.—Citizens will vote on bonds for construction of sewerage system.

Hamilton, Ont., Can.—Sewer Committee has rejected bids received for constructing sewers in four streets.

BIDS RECEIVED AND CONTRACTS AWARDED

Little Rock, Ark.—Pfeifer - Himstedt Plumbing Co. has contract at \$4,000 to construct sewer in District 55 in Eighth ward.

San Francisco, Cal.—The Harbor View district sewer was awarded to William Heathy for \$36,101; the H st. sewer, between Twentieth and Fortieth aves., to J. A. Dowling for \$83,601, and the Ocean ave. sewer, from Lee to Arlington sts., to E. J. Gallagher for \$14,800.

San Leandro, Cal.—The contract for the construction of outlet sewer through the recently annexed territory was awarded to John Heafey, of Berkeley, by the Board of Trustees, his bid of \$11,945 being the lowest; seven other bids, ranging from \$18,240 to \$12,393, were received from Scott & Farley, M. Escorse, F. E. Nelson, M. Murphy, W. J. Schmidt, P. Mathieson and Charles Vincent.

Washington, D. C.—Contract for constructing section of West Brightwood trunk sewer in Saul's addition has been awarded to R. J. Beall Construction Co., 1217 F st., N. W., at \$13,335.

Garrett, Ind.—J. O. Landis, city, has secured the contract to construct sewer at \$27,682.

South Bend, Ind.—The bond of Hoban & Roach has been approved and the contract signed for the West Wayne st. pipe sewer by the Board of Public Works.

Davenport, Ia.—The Davenport Construction Co. got the Arlington ave. sewer job by being \$2 lower than Independent Construction Co.; following are the bids: Independent Construction Co., 73½c. per ft.; Davenport Construction Co., \$1.236 for the job; P. Connelly, 92c. per ft.; Hydraulic Concrete Construction Co., 98c. per ft.; Lloyd & Co., 77c. per ft.

Storm Lake, Ia.—Contracts for the installing of the sewer system were awarded to the Des Moines and Sioux City firms; aggregate cost, \$40,411.60.

Boston, Mass.—Superintendent Emerson has awarded to Antony Cefalo a contract to construct the brook conduit in Grew ave. between Hyde Park ave. and Canterbury st., West Roxbury, for \$8,556.50. Cefalo was the lowest of 11 bidders; other bidders were D. F. O'Connell, \$9,400; Peter W. Hill, \$9,795.25; West Roxbury Trap Rock Co., \$9,802.10; McCarthy & Walsh, \$9,857.75; D.

E. Lynch, \$9,937; Edward Hayden, \$10,026; John J. Falvey, \$12,922.50; A. M. Cussack, \$13,027; F. H. Farrington, \$15,756.40, and W. H. Ellis, \$21,275.

Boston, Mass.—Superintendent Emerson has awarded to E. F. Kennelly a contract for the construction of sewerage works on Washington st. between Williams st. and Arborway, West Roxbury, for \$1,483.50; other bidders were: John F. O'Connell, \$1,566.50; John Guarino, \$1,597; Mark H. Lynch, \$1,743.50, and D. E. Lynch, \$2,169.

He also awarded to John O'Brien a contract to build a sewer on Louis Pasteur ave. between the Fenway and Longwood ave., for \$820; other bidders were: E. F. Kennelly, \$843.50; A. Cefalo, \$867.50; B. Maffier, \$945.50; F. H. Corwin Co., \$1,089.50, and D. E. Lynch, \$1,369.

Flint, Mich.—Contracts for pipe sewers, bids opened Sept. 7, have been awarded as follows: To W. H. Hatch & Sons Co., of Detroit, Dayton and Warren st. sewers, at \$2,206 each; A. P. Southworth, of Adrian, 5th, 6th and Avon sts. sewer, at \$8,885.—D. E. Newcombe, City Clerk.

Alden, Minn.—Turner Bros., Minneapolis, have secured contract to construct trunk sewer.

West Duluth, Minn.—George R. King was the lowest bidder on the contract for laying a sanitary main trunk sewer in West Duluth, at \$20,746.25, with about \$7,000 to be added if certain additions contemplated for the sewer are decided upon. P. McDonnell was the only other bidder, at \$24,630.75; he also figured on the extra \$7,000 in case the extra work is decided upon; contract was let to Mr. King.

St. Joseph, Mo.—Board of Public Works has awarded contract for extension of Grand ave. sewer to C. W. Dillingham at \$14,985.

Red Lodge, Mont.—L. W. Schrueth, Fargo, has secured contract to construct sewers in Dist. No. 1 at \$8,539; other bids were Plimkett & Geist, \$9,651, and Peter Oren, \$9,482.

Norfolk, Neb.—Guy E. Smith has secured contract to construct a 15-in. sewer in Norfolk ave. at \$1,186.

Irrington, N. J.—Bids were opened for the construction of sewers on Tremont terrace, Leslie place, Sherman place and Prospect ave. from James A. Christie, Joseph Imbusco, H. O. Harrison, D'Amato & Stefanelli, of Newark, and Miele & Bruno and John Dorer of Irrington; the award was made to John Dorer, at \$2,574.

Brooklyn, N. Y.—State Architect Ware has awarded contract for an addition to the sewage disposal plant of the Kings County State Hospital to the Ross-Bush Co., New York City, for \$5,000.

New York, N. Y.—Bids were opened Sept. 7 by the President of Bronx Borough for constructing outlet sewer and appurtenances in White Plains rd., between East River and E. 152d st.; in E. 152d st. between White Plains rd. and Avenue B; in Avenue B between E. 152d st. and Lafayette ave., and in Lafayette ave. between Avenue B and Avenue A; following are detailed bids received: (a) McDonald & Barry, Tremont and Webster aves., \$725,664; (b) J. C. Rodgers, Jr., 121 W. 125th st., \$765,237; (c) C. W. Collings, 91 Fordham rd., \$734,619; (d) Wakefield Construction Co., 2895 Marion ave., \$671,725; (e) F. V. Smith Construction Co., 147 E. 125th st., \$716,900; (f) J. H. Holmes, Brooklyn, N. Y., \$741,888; (g) Rodgers & Hagerty, 41 Park Row, \$677,594; 18 lin. ft. 30-in. pipe, a \$5.00, b \$6.00, c \$8.00, d \$4.00, e \$5.00, f \$6.00, g \$3.24; 192 lin. ft. 24-in. pipe, a \$4.50, b \$5.00, c \$5.00, d \$3.00, e \$4.00, f \$4.00, g \$3.00; 237 lin. ft. 18-in. pipe, a \$4.00, b \$3.00, c \$1.00, d \$3.00, e \$3.00, f \$2.50, g \$2.70; 92 lin. ft. 15-in. pipe, a \$3.50, b \$3.00, c \$3.50, d \$3.00, e \$2.50, f \$2.50, g \$2.10; 435 lin. ft. 12-in. pipe, a \$3.00, b \$3.00, c \$3.00, d \$2.50, e \$2.00, f \$2.00, g \$1.50; 1,340 spurs, a \$1.00, b \$1.00, c \$1.00, d \$2.00, e \$2.00, f \$0 cts., g 90 cts.; 103 manholes, a \$90.00, b \$60.00, c \$60.00, d \$75.00, e \$50.00, f \$50.00, g \$60.60; 116,300 cu. yds. excavation, a \$1.25, b \$2.00, c \$1.20, d \$1.50, e \$1.88, f \$1.90, g \$1.18; 35 cu. yds. masonry, a \$15.00, b \$15.00, c \$12.00, d \$20.00, e \$15.00, f \$10.00, g \$10.80; 32,500 Class A concrete, a \$8.00, b \$6.25, c \$9.00, d \$7.21, e \$6.90, f \$8.75, g \$7.00; 6,500 Class B concrete, a \$8.00, b \$6.00, c \$7.00, d \$6.00, e \$5.50, f \$6.50, g \$6.60; 4,500 Class D concrete, a \$8.00, b \$5.00, c \$6.00, d \$6.00, e \$6.00, f \$5.00, g \$6.60; 5,200 broken stone, a \$2.25, b \$2.00, c \$2.00, d \$2.00, e \$1.25, f \$1.50, g \$1.80; 895 M. ft. timber, a \$45.00, b \$56.00, c \$40.00, d \$35.00, e \$35.00, f \$25.00, g \$30.00; 112,300 lin. ft. piles, a 30 cts., b 30 cts., c 30 cts., d 30 cts., e 30 cts., f 30 cts., g 40 cts.; 3,050,000 lbs. steel bar ($\frac{3}{8}$ to $1\frac{1}{2}$ -in.), a .035 cts., b .04 $\frac{1}{2}$ cts., c .04 cts., d .03 cts., e .032 cts., f .03 cts., g .042 cts.; 261,000 lbs. structural steel, a .045 cts., b .05 cts., c .04 cts., d .04 cts., e .05 $\frac{3}{4}$ cts., f .03 $\frac{3}{4}$ cts., g .06 cts.; 6,600 sq. ft. wire netting, a 19 cts., b 10 cts., c 25 cts., d .08 cts., e .05 cts., f 10 cts., g .05 cts.; 1,000 lin. ft. 12 to 24-in. drain, a \$4.00, b \$2.00, c .01 cts., d \$1.50, e \$3.00, f \$1.50, g

\$1.20; 3,400 lin. ft. 6-in. risers, a \$2.00, b \$2.00, c \$1.00, d 50 cts., e \$1.50, f 75 cts., g 60 cts.; 330 lin. ft. w. i. fence, a \$4.00, b \$3.90, c \$2.50, d \$4.00, e \$4.00, f \$3.00, g \$4.80; 90 sq. yds. vit. brick pavement, a \$7.50, b \$4.00, c \$2.50, d \$8.00, e \$4.00, f \$4.00, g \$3.00.

Lorain, O.—H. Y. Baxter and E. M. Ely were low bidders for the sewer connection work in East Erie, Oakdale, Lake place, 13th st. and Hamilton ave.; Baxter was low on the East Erie ave. and Oakdale work, and Contractor Ely on Lake place, 13th and Hamilton st. work; Faragher Bros. were the only other bidders.

Oklahoma City, Okla.—Contract for constructing a sanitary lateral sewer in Blocks 22 and 23, bids opened Sept. 7, has been awarded to F. R. Stone.—Robt. Parman, City Clerk.

Philadelphia, Pa.—Edwin H. Vane, city, has secured contracts for sewer work at \$40,000.

Wilkes-Barre, Pa.—D. M. Rosser Engineering & Construction Co. has been awarded contract for constructing 7-ft. circular brick sewer from No. Penna. ave. to the river for \$77,629.97; Joseph Hender bid \$75,522, but failed to enclose a certified check with his proposal.

Lockhart, Tex.—City has awarded contract at \$2,093 to Heffron & Falligant, Galveston, to extend sewer system.

Salt Lake City, Utah.—Sewer extension 222, in the Third ward, on which the City Engineer had placed an estimate of \$6,270, was awarded to J. D. Hanley for \$5,844.29, with other bids as follows: Merrill & Johnson, \$6,647; Strange & McGuire, \$6,211.92.

Aberdeen, Wash.—Keasal Construction Co. has secured contract for constructing sewers in District E at about \$20,000.

WATER SUPPLY

Bessemer, Ala.—Jonesboro is making effort to secure contract with Bessemer Water Works Co. by which company will supply town with water.

Vallejo, Cal.—Board of City Trustees will call special election at early date to vote on \$70,000 bonds for improvements to water and fire protection systems.

Denver, Col.—City is considering construction of municipal water system.

Cuthbert, Ga.—Citizens will vote October 12 on bonds for installation of water works.

Champaign, Ill.—City will equip two new 120-ft. wells with new pumps.

Joliet, Ill.—Plans have been completed by Assistant Engineer Bannon for independent water system.—H. A. Stevens, City Engineer.

Oak Park, Ill.—Town will form an improvement association to secure water service from Chicago.

Maquoketa, Ia.—Fire and Water Committee has decided to extend city mains about 600 ft. west along Emma st.

Seymour, Ia.—Citizens have voted \$35,000 bonds for constructing water works and sewers.

Pratt, Kan.—Bids will be received September 23 for \$20,000 water works bonds.—G. W. Crow, City Clerk.

Wakefield, Kan.—Plans have been prepared by Engineers Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., for a system of water works; cost \$20,000.

Lake Charles, La.—Council has adopted ordinances for extension of water and light service.

New Orleans, La.—Bids will be received September 23 by Sewerage and Water Board for furnishing six months' supply of brass and galvanized fittings to be used in making water works house connections.—F. S. Shields, Secretary.

Camden, Me.—The Mousam Water Co. will lay 4,000 ft. of pipe in Cape Arundel.

Lisbon, Me.—City has awarded \$74,000 water bonds to E. H. Rollins & Sons at \$104.30.

South Paris, Me.—Citizens have voted \$68,000 bonds for installation of water works.

Baltimore, Md.—Specifications are being prepared by Consulting Engineer Daniel B. Banks, Maryland Savings Bank Bldg., for construction of city's pipe line station on South st.; bids will be advertised at once.

Takoma Park, Md.—Citizens have voted \$10,000 water bonds; \$6,500 will be used for installation of filtration plant, \$2,500 for water meters and \$1,500 for enlarging reservoir; bids will be opened October 1 for construction and bonds.—W. G. Platt, Mayor; Ben G. Davis, Town Clerk.

Winthrop, Mass.—City will install 1,000,000-gallon tank and tower and 1,600 $\frac{5}{8}$ and $\frac{3}{4}$ -in. water meters; \$20,000 worth of main pipe will also be laid; bids for the tower are to be asked at once.—C. Howard, Town Engineer; Lewis R. Dunn, Superintendent Water Department.

Benton Harbor, Mich.—A. T. Maltby, Consulting Engineer, 803 Great Northern Bldg., Chicago, Ill., will soon make preliminary report on improvements to water

works plant, to secure a new water supply and building a power plant and additions to the water mains.

Buckley, Mich.—City is considering building of water works system.

Monroe, Mich.—Council has instructed Board of Public Works to obtain estimates for construction of municipal water plant.

Aurora, Minn.—Estimate of cost of installing water works system is being prepared by Village Engineer.

Goodhue, Minn.—Water Board is considering construction of water mains on West 4th st.

Gulport, Miss.—City has sold \$50,000 water works extension bonds to Union Trust and Savings Co. of Cincinnati.

Glasgow, Mo.—Plans have been prepared by Engineers Burns & McDonnell, Scarritt Bldg., Kansas City, for water works, electric lights and sewers.

Kansas City, Mo.—Plans submitted by Smith & Rea have been approved by Jackson County for construction of reservoir near county hospital; capacity 18,000,000 gallons; bids will be received at once.

Collingswood, N. J.—West Collingswood has voted in favor of proposed municipal water system.

Newark, N. J.—Members of the City Council recently visited the Pequannock and Wanaque watersheds; it is proposed to build a new reservoir which will duplicate the present supply.

New York, N. Y.—Bids will be taken shortly for 1,400 tons of 6-in. to 12-in. cast-iron pipe and 100 tons of special castings.—J. H. O'Brien, Commissioner Water Supply, Gas and Electricity.

North Pelham, N. Y.—City will lay 6-in. water pipe on 6th st. and 3d ave.

Tupper Lake, N. Y.—City will build a dam at foot of Raquette Pond.

Newcastle, N. C.—Craig Healing Springs Co. will install water works system.—G. W. Layman, President.

Cleveland, O.—Village of Lakewood has sold \$3,500 water main bonds to First National Bank of Cleveland.

Dayton, O.—Superintendent Heffernan has estimated cost of laying water mains on Pritz ave. at \$1,541 and on Bowen st. at \$1,079.

Dayton, O.—City has sold \$1,500 bonds for repair of steel dam over Miami River in Riverdale to City National Bank at premium of \$22.

Guthrie, Okla.—Council will consider resolution calling special election for \$50,000 bonds for additions to filtration plant and extensions to water mains.

Kingston, Okla.—Citizens have voted \$12,500 bonds for water works.

Yukon, Okla.—City is considering preparation of plans for water works.—J. F. Kroul, Chairman Committee.

Cottage Grove, Ore.—Citizens will soon vote on \$150,000 bonds to bring gravity water system from Lang Creek; distance about 18 miles; 12-in. pipe to be used.

The Dalles, Ore.—Board of Water Commissioners will increase water supply.

Weston, Ore.—City is considering improvements to the water works.

Doylestown, Pa.—Borough Council has decided that all bids for repairs to reservoir be called off, owing to shortage of water caused by drought, preventing emptying reservoir for inspection; bids will be asked in near future.—A. Harry Clayton, Borough Clerk.

Philadelphia, Pa.—Council will consider ordinance authorizing laying of water pipe in 35 streets.—J. E. Reyburn, Mayor.

Spring Grove, Pa.—Citizens are urging installation of municipal water and electric light plant.

Wrightsville, Pa.—Gravitation Water Supply Co. will be formed to supply borough with water.—L. S. Stoner is interested.

Woonsocket, R. I.—Joint Standing Committee has recommended \$2,500 appropriation for new top dressing for filter fields.

Columbia, S. C.—Citizens have voted to install water works system.

Wagner, S. D.—Citizens have voted bonds for extension of water works system.

Johnson City, Tenn.—Citizens have voted to construct municipal water plant; supply will be brought from mountain springs, distance 11 miles; it will be gravity system and cost \$300,000.

Coleman, Tex.—Bids will be received by Council for \$30,000 water works improvement bonds.—W. Z. Champion, Secretary.

El Paso, Tex.—Committee appointed by Council to investigate condition of water company's plant and adequacy of supply has reported recommending that city purchase International Water Company's plant, valuing the same at \$700,000, and that \$500,000 be spent on improvements to the system, including sinking additional wells and laying larger mains.

Ennis, Tex.—Citizens will vote October 5 on \$12,000 bonds to complete water works.

Hamilton, Tex.—Citizens have voted bonds for construction of water works.

Palacios, Tex.—Palacios Water Supply Co. has been incorporated by C. Doss, R. J. Hill and W. C. Williams; capital \$20,000.

Willard, Utah.—Cost of installing water system is estimated at \$10,000.

Christiansburg, Va.—Town will issue \$40,000 bonds for installation of water works.

Roanoke, Va.—Citizens will vote December 11 on \$45,000 bonds for Water Department.

Aberdeen, Wash.—City Engineer Ewart has recommended installation of gravity water system.

Georgetown, Wash.—Council has received application of Georgetown Water Co. for franchise.

Clarksburg, W. Va.—Citizens have voted \$270,000 bonds for new water works system, including filtration plant, sewerage and street paving.

Iron, W. Va.—Plans have been prepared by Engineer A. Geisler, Dayton, O., for water works system.

Loveland, W. Va.—Installation of water system is being considered.

New Martinsville, W. Va.—Citizens have voted \$12,000 bonds for improvements to water works.

Madison, Wis.—Water Board has selected C. B. Stewart, Consulting Engineer, to make investigation and report for general plan of development of water supply.

Exeter, Ont., Can.—Citizens have voted \$22,000 for water works system.

BIDS RECEIVED AND CONTRACTS AWARDED

Eufaula, Ala.—City has awarded contract to J. B. McCrary & Co., Empire Bldg., Atlanta, Ga., to construct settling basin for waterworks.

Roosevelt, Ariz.—Secretary of the Interior, Washington, D. C., has awarded to the Chas. F. Elmes Co., Chicago, Ill., contract for furnishing three 58-in. balanced valves for use in connection with the discharge pipes in Roosevelt dam. Salt River project; cost about \$13,890.

San Francisco, Cal.—Chas. C. Moore & Co. submitted the only bid to supply f.o.b. cars, Corporation yard, 2,378 tons of cast steel specials, including sleeves, T's, crosses and elbows for the auxiliary fire system at \$156 a ton of 2,000 lbs. Total cost, about \$370,968.

San Francisco, Cal.—Board Public Works has awarded contract to construct six reinforced concrete fire cisterns to the Keystone Construction Co.; cost \$30,600.

Derby, Conn.—Birmingham Water Co. has awarded contract to construct dam for reservoir, which is to be built on Great Hill, to Ryan-Unmack Co., of New Haven; dam is to be 240 ft. high at top and 28 ft. thick at the bottom of spillway.

Waterbury, Conn.—Bids for the contract to pipe the tunnel through the masonry dam at the Wigwam were submitted as follows: Frank D. Aurio, \$5,915; F. J. Boas, \$8,000; contract was awarded to Frank D. Aurio as the lowest bidder.

Bids for stripping the side of the dam were: Goodman & Trumbull, \$9,785; F. J. Boas, \$11,060; Frank D. Aurio, \$12,610; Edward McManus, \$12,548.88.

Washington, D. C.—Bids were received as follows, Sept. 11, by District Commissioners, for furnishing curb and corporation cocks: Corporation cocks, H. Mueller Mfg. Co., 254 Canal st., New York, $\frac{3}{4}$ -in., 57.5 cts.; 1-in., 85.25 cts.; 1 $\frac{1}{2}$ -in., with guard or goose neck, 60 cts.; 1 $\frac{1}{2}$ -in., \$1.35; 1 $\frac{1}{2}$ -in., \$2.18; curb cocks, H. Mueller Mfg. Co., New York, $\frac{3}{4}$ -in., 58 cts.; 1 $\frac{1}{2}$ -in., \$1.66. This was the only bid received.

Shelley, Ida.—Council has awarded contract to N. D. McCutcheon Co., of Idaho Falls, for the construction of a water works

system consisting of a reservoir on the butte east of town, with a capacity of 60,000 gal., an 8-in. main to town and two miles of 2-in. galvanized pipe, with all necessary hydrants, valves, etc., the cost not to exceed \$10,000; and to A. Blomberg for driving a 6-in. well 250 ft. deep, guaranteeing a water capacity of 50,000 gal. per day, at \$3 per ft.

Chicago, Ill.—Commissioner Public Works John J. Hanberg has awarded contract for installation of two new pumps at the Roseland station to the Allis-Chalmers Co., of Milwaukee, Wis.; two pumps, operated by steam, have each a capacity of 25,000,000 gal. of water every 24 hours; cost will be \$259,900.

Rock Island, Ill.—The Board of Local Improvements has let contracts for laying of sewer and water mains in Island View Heights and for the 40th st. water main to P. F. Trenkenschuh, he being the lowest bidder; the paving & Construction Co., of Chicago, was the only other bidder.

Waukegan, Ill.—Following are bids opened by Council for constructing the settling well: A. H. Enmark, Lake Forest, \$4,396; Illinois Portland Cement Paving Co., Chicago, \$4,750, finished in concrete work, \$4,840; Calumet Construction Co., \$4,840, substitute wall of concrete or brick, \$6,480; figures include necessary piping, etc.

Madison, Ind.—Contract for sinking six wells in sand bar, Ohio River, has been awarded to Madison Machine Co., Madison, for \$4,200.—Geo. N. Harper, City Clerk.

Early, Ia.—Town Council has let contract to the Des Moines Bridge & Iron Works, Des Moines, for a 40,000-gal. steel tank and 60-ft. tower to replace present wooden tank and tower; cost complete, \$2,953.

Marshalltown, Ia.—Council has awarded contract to construct the concrete dam over the Iowa River, the retaining walls and the concrete foundations for the new pumping station to the Cleary-White Construction Co., of Chicago, Ill., at \$24,665.

Easthampton, Mass.—Daniel O'Connell Sons, of Holyoke, have been awarded contract to enlarge reservoir and build cement bottom and top on same for \$2,300.

Buffalo, N. Y.—Following are bids opened for two radial brick chimneys to be erected at the new water works pumping station, foot of Porter ave.: M. W. Kellogg Co., 50 Church st., New York, N. Y., \$38,648; Alphons Custodis Chimney Construction Co., 99 Nassau st., New York, N. Y., \$43,875; Heine Chimney Co., 115 Adams st., Chicago, Ill., \$55,294. Commissioner of Public Works Francis G. Ward has recommended the bid of M. W. Kellogg Co.

Hempstead, L. I., N. Y.—The Town Board has signed contract with the Jamaica Water Co. to furnish water to Hyde Park Village for a term of five years at \$600 per year, furnishing 30 hydrants.

Newburgh, N. Y.—Proposals were opened for the construction of the keeper's new house at Washington Lake, the plans for which were prepared some time ago by Architect F. E. Estabrook; the proposals were as follows: James Todd, complete, \$3,339; James F. Templeton & Son (plumbing and heating not included), \$2,875; Whitfield Crevling, complete, awarded contract, \$2,550; H. D. Satterly, of Fishkill (no accompanying deposit), \$2,895; William H. Thorn, complete, \$2,862.

Grand Forks, N. D.—The contract for laying water main No. 66 will be let to Pastoret & Lawrence; bids submitted follow: Pastoret & Lawrence, \$6,733; B. O. Paulsness, \$7,125; P. McDonnell, \$6,803.

Wellington, O.—H. L. Shaw, of Lorain, has been awarded contract for making an extension of the four-inch mains for the Wellington water works.

Henryetta, Okla.—Contract for constructing water works, bids opened Sept. 9, has

been awarded to W. W. Cook & Son, of Hugo, Okla., at \$38,000.—Granby Jackson, of Mt. Pleasant, Tenn., Engineer.

Spangler, Pa.—The Spangler Water Co. has awarded to Polo Azzara, of Barnesboro, the contract for building the new dam on Brown's Run; the reservoir will supply Barnesboro with water; the bid of Mr. Azzara was between \$20,000 and \$25,000.

Salt Lake City, Utah.—A contract for the building of the "puddle wall" of the Plute reservoir project was let by the State Board of Land Commissioners to the Western Construction Co., of Sevier, for \$22,000.

Christiansburg, Va.—City has awarded following contracts for furnishing supplies for waterworks system: Lynchburg Foundry Co., Lynchburg and Radford, Va., for piping, and Rensselaer Manufacturing Co., Troy, N. Y., for gate, check, foot and relief valves, valve boxes and fire hydrants; Howard Murphy, 426 Walnut st., Philadelphia, Pa., is engineer in charge.

Seattle, Wash.—Higher bids were submitted to the Board of Public Works September 19 for the lining of the two Green Lake reservoirs than were submitted two months ago, when E. C. McDougall offered to line the storage basins for \$130,979. Later he reported that he made an error in computation and asked that he be allowed to add \$38,000 to his tender. This privilege was denied and his check for \$6,550 was forfeited. A. R. Gibson was the next lowest bidder at that time at \$164,164.50. The International Contract Co. submitted the lowest bid at the latest call, at \$185,599, with Ide & Jones second, at \$194,362.

LIGHTING AND POWER

Berkeley, Cal.—Citizens are urging installation of electrolights on Center st.

Elmhurst, Cal.—Board of Trade will recommend installation of street lighting system.

Los Angeles, Cal.—Council will call election on \$3,500,000 bonds to develop power on Los Angeles aqueduct.

Marysville, Cal.—Chairman of Hospital Committee of the Board of County Supervisors has been authorized to advertise for bids for installation of electric pumping plant for the county infirmary.

Monterey, Cal.—Monterey County Gas & Electric Co. is considering improvements, including installation of electric distributing system in Pacific Grove, a new transmission system to Salinas and purchase of five new cars.

Redding, Cal.—J. H. Logan, of Santa Cruz, has located 250,000 inches of water in Pit River for power purposes.

Tropico, Cal.—Public highway lighting district has been formed to provide illumination.

Athens, Ga.—Atlanta Power Co., Atlanta, is planning to develop and transmit 16,000 hp. by electricity to Tallulah, Gainesville and Atlanta.—C. E. Parsons, 82 State st., Albany, N. Y., Engineer in Charge.

Atlanta, Ga.—Council Committee on Electric and Other Railways has decided to extend for one year franchise of Piedmont Power Co., which is to furnish Atlanta with electric power.

Cuthbert, Ga.—Citizens will vote October 12 on bonds for installation of electric light plant.

Brazil, Ind.—Brazil Electric Co. and the Terre Haute, Indianapolis & Eastern Traction Co. submitted bids for lighting city buildings, fire department and the viaduct; both bids were the same, 6c. per 1,000 kilowatts, and both were rejected.

Clinton, La.—Citizens will vote on \$15,000 bonds to purchase and equip electric plant.

Lake Charles, La.—Council has adopted

Newburgh, N. Y.—The contract for raising the dam at Washington Lake and other work connected with that part of the water supply improvement was awarded, Sept. 17, to the Todd Construction Co., city, by the Board of Water Commissioners; there was a total of twelve bidders, of whom the Todd Construction Co. was the lowest. Under (a) is given the price bid if clay for the puddle wall is obtained on the premises, and under (b) the price bid if it is obtained outside; the totals bid were as follows: Todd Construction Co., (a) \$48,763, (b) \$48,763; Donato Cuozzo, (a) \$49,088, (b) \$54,780; Parker & Beebe, (a) \$49,433, (b) \$51,158; Jos. Canepi, Jr., (a) \$53,250, (b) \$61,012; John C. Tierney, (a) \$55,608, (b) \$59,058; P. P. O'Hehir, (a) \$57,511, (b) \$58,201; Wm. R. Spino, (a) \$57,591, (b) \$61,489; Lafferty & Weir, (a) \$59,740, (b) \$68,365; Jobson-Hooker Co., (a) \$58,827, (b) \$63,518; J. P. Convery's Sons, (a) \$60,167, (b) \$67,067; Louis Gross, (a) \$62,374, (b) \$65,824; Samuel Beskin, (a) \$73,084, (b) \$73,084.

NAME OF BIDDER	Excava- tion per cu. yd.	Em- bank- ment per cu. yd.	Rock Excava- tion per cu. yd.	Puddle Wall per cu. yd.		Broken Stone, per cu. yd.	Rolling Patton Avenue per sq. yd.	Old Paving per sq. yd.	New Paving per sq. yd.	Point- ing Paving, per sq. yd.	Rip-rap per cu. yd.	Con- crete, per cu. yd.	Waste Wier, Lump Sum	Calyer Dam Gate House, Lump Sum	Iron Pipe, per lin. ft.
Lafferty & Weir, N. Y. City.	\$0.49	\$0.38	\$1.50	\$2.50	\$5.00	\$2.00	\$0.15	\$0.80	\$1.10	\$0.50	\$3.50	\$7.50	\$200.00	\$175.00	\$0.50
Donato Cuozzo, N. Y. City.	.55	.40	1.50	1.10	2.75	2.10	.15	.55	.75	.25	1.30	7.00	300.00	250.00	1.00
Joseph Canepi, Jr., Yonkers	.40	.47	2.00	1.75	4.00	2.00	.17	.40	.50	1.50	1.70	7.50	450.00	700.00	1.16
Jobson-Hooker Co., N. Y. C.	.43	.45	2.30	2.85	3.90	1.95	.30	.68	.88	.35	2.53	7.55	402.50	345.00	2.00
Parker & Beebe, Waterford.	.35	.39	1.50	2.20	2.70	1.50	.10	.52	.90	.40	2.25	6.00	450.00	125.00	1.00
P. P. O'Hehir, Warwick.	.53	.48	1.50	1.25	1.45	2.10	.10	.72	.90	.30	3.20	6.75	200.00	300.00	1.00
J. P. Convery's Sons.	.30	.60	1.00	2.10	4.00	2.50	.20	.50	1.00	.10	2.00	7.00	130.00	150.00	.25
J. C. Tierney, Hoboken, N.J.	.40	.55	1.90	2.10	3.10	1.75	.40	.40	.65	.25	1.95	8.00	100.00	150.00	1.00
Todd Construction Co.	.60	.50	2.00	.65	...	.75	.10	.75	1.20	.20	1.00	7.00	300.00	100.00	1.00
Wm. R. Spino, Fishkill.	.58	.39	2.50	2.54	3.67	2.43	.40	.30	.68	.45	2.79	8.00	135.00	150.00	2.25
Louis Gross.	.40	.55	2.00	1.50	2.50	2.00	.10	.50	1.50	.50	3.50	9.00	150.00	300.00	.50
S. Beskin, Fishkill.	.50	.55	2.75	4.00	...	2.25	.05	.50	1.36	.50	4.00	8.00	200.00	300.00	.48

ordinances for extension of light and water service.

Mandeville, La.—Council has granted franchise to S. Pigaglio for construction of electric light plant.

Thurmond, Md.—Citizens have decided to form corporation and build electric lighting plant.—Col. J. M. Rouzer, P. N. Hammaker and others are interested.

Fairfax, Minn.—Citizens will vote on \$18,000 bonds for installation of electric light plant.

Grand Rapids, Minn.—City is considering proposition to replace present street arc lighting system with tungsten incandescent lamps.

Minneapolis, Minn.—Dr. P. M. Hall has prepared plans for municipal lighting plant; plan is to utilize power which can be generated at crematory; installation of dynamo, cost \$17,000, is proposed.

Louisville, Miss.—Town Council has granted Ed. Grover permission to erect poles and furnish power for lighting.

Glasgow, Mo.—Plans have been prepared by Engineers Burns & McDonnell, Kansas City, for electric lights.

Kansas City, Mo.—Electric Traction Construction Co., Commerce Bldg., will erect and equip fireproof power house for proposed Interstate Railway from St. Joseph to Kansas City; cost \$400,000.

Brookhaven, L. I., N. Y.—The Second District Public Service Commission has authorized Patchogue Electric Light Co. to exercise franchises to furnish light for public and private use in this town.

Lyons, N. Y.—Public Service Commission has granted permission to Lyons Gas Light Co. to issue a \$100,000 mortgage; of this sum \$9,600 is to be used to construct a high-pressure gas main.

New York, N. Y.—Bronx Gas & Electric Co. has petitioned New York Public Service Commission for authority to issue \$1,500,000 bonds.

Port Byron, N. Y.—Village Board of Trustees has selected Engineer H. B. Sweet, Clarendon Bldg., Utica, N. Y., to prepare plans for a municipal lighting plant; cost \$15,000.

Marshall, N. C.—W. T. Weaver Power Co., Asheville, is planning to begin proposed additional water power development on French Broad River.

Cuyahoga Falls, O.—Falls River & Machine Co. and C. M. Walsh have petitioned Council for franchise to construct a power plant.

Dayton, O.—Council has passed, under suspension of rules, ordinance authorizing Engineer to prepare estimates and plans for lighting nine streets, using ornamental poles and electricity.

Springfield, O.—Councilman Orville Burkett will introduce ordinance into Council to provide for \$100,000 bond issue for erection of a municipal light plant; wants question submitted to vote in November; street lighting now costs \$50,000 a year.

Toledo, O.—Council has decided to improve, by lighting with electric light, four streets.—J. M. Babcock, Clerk.

Waterville, O.—Company has been incorporated by Delmar J. Farnsworth, G. D. Dedrich, C. J. Stickney to furnish light and power to this town; capital \$10,000.

Ardmore, Okla.—J. T. Dickerson will apply for franchise to install an electric light system.

El Reno, Okla.—H. M. Bylesby & Co., Chicago, Ill., have purchased El Reno Gas & Electric Co. and will enlarge and improve plant, extending electric service throughout city and suburbs.—H. H. Stevens, Manager.

Okmulgee, Okla.—Federal Engineering & Contracting Co. desires bids on boiler, pumps, pipe, standpipe, cement, crushed stone, sand, brick, etc., for construction of city water works.

Oswego, Ore.—Oregon Iron & Steel Co. will erect power plant to furnish electricity for lamps and motors in this city and surrounding towns.

Portland, Ore.—Seventh Street Improvement Club will soon let contract for furnishing light poles with cluster of five lamps every alternate 50 ft. on each side of 7th st. between Couch and Jefferson sts.—Charles A. Malarkey is interested.

Vale, Ore.—R. C. Carter, Manager of the Idaho Electrical Supply Co., Boise, has been granted franchise by Council to pipe town with cold water.

Spring Grove, Pa.—Citizens are urging installation of municipal light and water plant.

Wilkes-Barre, Pa.—Charters permitting erection of large power dam in Susquehanna River near Towanda are ready; project was planned by Meikleham & Dinsmore, New York bankers.

York, Pa.—Bids for lighting city streets, contract for which will soon expire, will be authorized by Light Committee of City Council some time during latter part of this month; at present there are about 418 lights used by the city for which the city pays about \$1,270 a month, or about 13½¢. per

light a night; Edison Co. holds the present contract.

Marion, S. C.—Martin Maloney, Philadelphia, Pa., has purchased Marion Water, Light & Power Co.; improvements will be made to plant.

Elgin, Tex.—Mayor W. H. Kennedy has stated that immediate steps would be taken to secure good electric light plant.

Floydada, Tex.—Robert Hailey, Matador, is interested in establishment of ice and electric light plant.

Norfolk, Va.—Main st. merchants have subscribed \$3,100 for installation of 20 arches on Main st.; ten 60-cp. tungsten lamps will be placed on each arch; Industrial Commission will ask Council to recommend illumination of Commercial place.

Woodstock, Va.—H. B. Chapman has purchased property on Shenandoah River and will develop water power; also install electric light plant.

London, Ont., Can.—Board of Aldermen has instructed E. I. Sefton, electrical engineer, to prepare plans for underground system for the transmission lines of the Hydro-Electric Commission power system and to procure estimates of cost of same; cost is estimated at \$70,000.

Renfrew, Ont., Can.—Town has engaged John B. McRae, Consulting Engineer, to report on advisability of installing municipal hydro-electric power plant.

BIDS RECEIVED AND CONTRACTS AWARDED

Galena, Ill.—Des Moines Bridge & Iron Co., Des Moines, has secured contract for building power house for the Interstate Construction Co.; estimated cost, \$150,000.

Monmouth, Ill.—Westinghouse Co., of New York, N. Y., has secured contract to furnish for power house of the Rock Island Southern on Edwards River, equipment, consisting of two 100 turbine units of 2,500 horsepower each, complete, with 15,000 kw. generators.

Baltimore, Md.—The following bids were received by the Board of Awards September 17 for furnishing and maintaining gas and gasoline street lights: American Street Lighting Co., for one, two and three-year contracts, gas lamps, \$10.10, and naphtha lamps, \$26. Sunlight Illuminating Co., Pittsburgh, gas lamps, \$9.60, naphtha lamps, \$25. Baum-Collier Co., Memphis, \$9.80, \$9.60 and \$9.20 respectively on one, two and three-year contracts for gas lamps alone. There are 7,333 gas lamps and 1,030 naphtha lamps covered in the bids.

Milford, Mass.—Selectmen have awarded new contract to the Milford Electric Light & Power Co. for street lighting for one year; company is to furnish 42 arc lamps of 1,200 c. p. and 72 tungsten lamps. The tungsten lamps will replace 16 of the arc lamps now in use; cost of the service will be \$5,000 per year.

Red Wing, Minn.—Chippewa Valley Ry., Light & Power Co., Eau Claire, Wis., has awarded contract to Red Wing Gas Light & Power Co. to supply them with electrical current for their entire plant.

St. Louis, Mo.—Commercial Electric Supply Co. has submitted lowest bid for electric lamps in schools at \$4.831.

Caldwell, N. J.—Resolution providing for three years' contract with Public Service Corporation for lighting Borough has been adopted by Council; contract will date from March 1, since which time no bills have been paid, as the Council made objection to the March bill, which was computed at the rate of \$20 per lamp as against \$16 for the preceding month; the new contract specifies a price of \$16 for the first and second years and \$20 for the third. Representatives Young and Zingg, of the Lighting Department for the corporation, urged that Council enter into a five years' contract, which should provide for a price of \$16 for the first year, \$17 for the second, \$18 for the third and fourth and \$20 for the fifth; Council flatly refused to consider the proposition.

Niagara Falls, N. Y.—The Board of Public Works has entered into a contract with the Buffalo & Niagara Falls Electric Light and Power Company for furnishing light on the terms laid down by the Public Service Commission some time ago.

Dayton, O.—Proposals for lighting the Dayton View bridge were received by the Service Board from the Dayton Gas Light & Coke Co., which offers several lighting plans ranging in price from \$562.50 to \$1,700. The proposition of the Dayton Lighting Co. was for \$560.

Fremont, O.—The Fremont Power & Light Co. has awarded to Robt. Lysle, of Chicago, Ill., contract to construct a concrete dam and power house; cost about \$60,000.

Hamilton, O.—The Ohio Fuel Supply Co., of Columbus, was the only bidder on the proposition to furnish the city with natural or artificial gas; it agrees to furnish natural gas for a period of 10 years at the

following rates: 18c. per 1,000 ft. for the first two years, 20c. for the next three years, and 22c. for the remaining five years. It reserves the right to supply manufacturers and big concerns, and accompanied its bid with a certified check for \$10,000; the city is also to convert its present artificial gas into a natural gas system by laying the necessary medium and low pressure lines and the installing of such regulating systems as are necessary.

Eugene, Ore.—J. B. Morris, city, has secured contract to construct 15 miles of transmission line in connection with the power plant on McKenzie River; cost \$3,642.

Reading, Pa.—Geo. S. Charles, Wilmington, Del., has secured contract from the Metropolitan Electric Co., of Reading, Pa., to furnish and install 16 625-horsepower Edge Moor boilers in the company's new power plant.

Waxahachie, Tex.—Contract has been made with a local electric light company to improve and extend the system of street lights; contract is for a term of five years; the new service will include four arc lamps and 90 60-cp. improved incandescents, the latter to be placed at the principal street crossings.

Seattle, Wash.—The Cameron Electric Co., of Emporia, Pa., has been awarded contract for next year's supply of incandescent lamps for the city Lighting Department, estimated to cost between \$40,000 and \$70,000. The bid of the Cameron company was approximately 10 per cent below the bids submitted by other bidders. All allowed a 2 per cent discount for payment in ten days and 2½ per cent additional if \$70,000 worth of lamps are used. A contract for a year's supply of lamps was awarded several weeks ago to the Fobes Supply Co., and through the efforts of Superintendent A. V. Bouillon the award was reconsidered and all bids rejected on the grounds that the Fobes Co. had entered into a private agreement to allow a discount of 2 per cent not called for in the specifications. Other firms submitting bids were: The Western Electric Co., Holabird Electric Co., Reardon Electric Co., Fobes Supply Co., Seattle Hardware Co., Cox & Gleason Co., and the Sterling Electric Manufacturing Co. The bid of the Westinghouse Electric Manufacturing Co. was declared irregular because one paragraph of the specifications had been stricken.

Cluster lights will be installed in 1st ave. between Virginia st. and Denny Way by the Olympic Foundry Co., at \$3,440, and the Agutter & Griswold Co., at \$24,658.96 for posts and conduits respectively.

Winnipeg, Man., Can.—Bids were opened Sept. 1 by Council for equipment for civic power plant. Contracts have been awarded as follows: For five 5,200-hp., double-runner, horizontal shaft turbines for 45 ft. head, at 164 r. p. m., in open pit, and for two exciter turbines, 450 hp., at 400 r. p. m., twin-runner in steel case, erected in our power house, to Jens Orten Boving Co., 90½ Union Court, London, Eng., \$97,150; for five 3,000-kw., 6,600-volt, 3-phase alternators and two 250-kw., 125-volt exciter generators, erected to Vickers Sons & Maxim, Sheffield, England, at \$93,080; for six 3,000 k.v.a., 66,000-volt, o. l. w. c., single-phase transformers and necessary switching and lighting protective apparatus, to Canadian Westinghouse Co., Ltd., Hamilton, Ont., at \$150,000; for light, heat and power system, installed complete, to Canadian General Electric Co., Ltd., Toronto, Ont., at \$11,600; for three electric traveling cranes, erected, to Canadian Fairbanks Co., Ltd., Winnipeg, Man., at \$14,900; for the auxiliary apparatus for the generating station, including valves, pumps, compressors and considerable mechanism, to same; and to the Canadian General Electric Co., Ltd., Toronto, Ont., at \$34,421.—Smith, Kerry and Chace, City Engineers.

FIRE EQUIPMENT

Orrville, Cal.—City Trustees are considering ordinance providing for organization of paid fire department.

Sacramento, Cal.—Curtis Oaks and Highland fire departments will install joint fire alarm system.

San Francisco, Cal.—Board of Works has recommended that \$28,000 be set aside for construction of a firehouse for truck No. 11 on Duncan st.

Stockton, Cal.—City will improve fire department by addition of auto apparatus.

Denver, Col.—Residents of Berkeley Heights are urging better fire protection.

Aurora, Ill.—City is considering purchase of aerial truck and new ladders; also erection and equipment of fire house.

Normal, Ill.—City is considering need of fire alarm system.

Peoria, Ill.—Fire Underwriters have recommended that the following be purchased for the Fire Department: Light combination truck, automobile chemical engine, re-

serve hose wagon with 1,200 ft. of 3-in. hose and fitted with turret pipe; also that engine companies Nos. 4, 5, 6, 7 and 8 be provided with combination hose wagons, to be equipped with 35-gallon chemical tanks.

Quincy, Ill.—City is in need of new fire engine.—Address Fire Chief Schlag.

Evansville, Ind.—Architect Frank Schlatter, Dickman Bldg., is working on plans for rebuilding No. 8 hose house on corner of 3d ave. and Columbia st.

New Orleans, La.—Site on Carrollton ave. will be purchased for proposed engine house.

Grand Rapids, Mich.—Architects Williamson & Crow have completed plans for engine house.

Brookhaven, Miss.—City will erect fire house.

Omaha, Neb.—Fire Chief Dave Garrett will recommend purchase of Scott engine and Seagrave hook and ladder truck; also erection of fire hall as near to E and F sts. as possible and between 27th and 29th sts.

Concord, N. H.—City is considering erection of three-run fire station; cost \$14,000.

South Orange, N. J.—Fifteen resident business men have organized hook and ladder company and have asked Township Committee for appropriation for equipment.

Peekskill, N. Y.—City will spend \$7,500 for motor fire engine.

Stratford, N. Y.—Stratford Fire Company is securing funds for purchase of additional apparatus.

Wilmington, N. C.—City is considering erection of fire station; plans being prepared.

Lorain, O.—Council will build fire station.

Guthrie, Okla.—Council will consider resolution calling special election for \$35,000 bonds for additional fire equipment and apparatus and reestablishment of Capitol Hill fire station.

Harrisburg, Pa.—Fire Committee has favorably reported ordinance for purchase of 2,000 ft. of hose.

Lewiston, Pa.—Fire companies are in need of additional hose.

Parkesburg, Pa.—B. F. Dorsheimer is urging Council to consider installation of additional fire apparatus.

Philadelphia, Pa.—Stratford Fire Company No. 1 has decided to purchase apparatus.

Anamoose, S. D.—Citizens are urging better fire protection.

Paris, Tex.—Architects Barry & Smith have completed plans for \$10,000 engine house.

San Angelo, Tex.—Citizens will vote October 12 on \$15,000 bonds to erect fire station and City Hall.

Norfolk, Va.—Board of Control will again consider establishment of fire station in Sixth Ward.

Seattle, Wash.—Council is considering ordinance for reconstruction of fire station at Pine st. and 3d ave.

Tacoma, Wash.—Plans have been completed for remodeling South Tacoma engine house; estimate, \$1,800.

BIDS RECEIVED AND CONTRACTS AWARDED

San Francisco, Cal.—The contract for the construction of a fire house for the crews of the two fire tugs was given to Ramsden & Flansburg for \$5,672.

Wilkes-Barre, Pa.—Robert Johnston, the local agent, has been awarded contract for a Pope-Hartford hose and chemical automobile; cost \$4,500.

Dallas, Tex.—H. J. Emmins was given contract for erection of the McKinney ave. fire station on his bid of \$5,630.

Salt Lake City, Utah.—Louis A. Geisler was awarded contract for building fire station No. 6, Eighth West and Eighth South sts., at a cost of \$2,765; plans and specifications drawn by Councilman L. D. Martin; other bids were: Black & Leffler, \$2,934; E. G. Griggs, \$2,800; W. P. Holley, \$3,222.

Portsmouth, Va.—A contract for 1,000 ft. of fire hose was awarded to the Quaker City Fire Hose Co., and a similar contract to the Porter-Moore Co.

Seattle, Wash.—The Seagrave Co., of Columbus, O., submitted the lowest bid for automobile fire apparatus, at \$5,400, for a combination chemical engine and hose wagon, and \$5,050 for a hose wagon; each will be of 60 hp.

ELECTRIC RAILWAYS

Montgomery, Ala.—Montgomery Traction Co. will extend its line on Jeff Davis ave.; also construct new line on Stone, Day and Hill sts.

Colusa, Cal.—Extension of time sought by Northern Electric Co. on its franchise for electric railway through streets is to be granted.

Mill Valley, Cal.—Company has been

formed by local capitalists to construct an electric railway from Locust ave. station to the Muir Woods and then to the Lagoon.—John Dias, President.

San Diego, Cal.—Board of Park Commissioners has granted G. W. Pursell permit to operate electric railway through City Park.

San Francisco, Cal.—Public Utilities Committee of Board of Supervisors has perfected secretly comprehensive plan of grid-iron city with a municipal street car system; plan includes subway under Market st. beneath Golden Gate Park and lines to every suburb.

Santa Rosa, Cal.—The Sonoma & Lake County Railroad Co. has secured right-of-way through Alexander Valley and on to Preston for its proposed electric railway.—J. E. Fulton, Lakeport, Manager.

Washington, D. C.—American consular officer in Latin America has reported that officials of tramway company have presented to local municipality outline of plan for construction of an underground tramway to extend under entire city; company will undertake to complete construction, at a cost of \$21,250,000, within three years of signing contract.—Address No. 3855, Bureau of Manufactures.

Orlando, Fla.—Central Florida Traction Co. is considering building road from Sanford to Kissimmee via Orlando; distance 45 miles.—M. O. Overstreet, President.

Pensacola, Fla.—Pensacola Electric Co. has applied for franchise to build extension on two streets.

Lewiston, Ida.—Lewiston Terminal Co. will begin construction on its proposed railway soon as Council grants franchise.—M. A. Means, President and General Manager.

Elgin, Ill.—Council has passed ordinance authorizing Aurora, Elgin & Chicago Railroad Co. to operate street railways upon four streets.

Watertown, Ill.—The Tri-City & Northwestern Interurban Railway, Port Byron, has applied for franchise to operate proposed electric railway in this city.

Monticello, Ind.—Tippecanoe & Monticello Interurban Railway Co. has been incorporated to construct and operate a system of interurban railways to connect Fowler, Lafayette, Monticello, Buffalo and Logansport; capital \$100,000.—Thos. W. O'Connor, Willis White, Monticello, and Charles E. Turner, Detroit, Mich., Incorporators.

Des Moines, Ia.—Adel City Railway has been incorporated to construct interurban railway from this city to Adel.—Dan A. Blanchard, L. M. Macy, W. B. Kinnick, Robert Pilmer, F. F. Flynn, B. J. Flynn, R. L. Parrish and H. A. Smith, Incorporators.

Marshalltown, Ia.—Line of interurban railway built and in operation from Marshalltown to Grundy Center within two years, and from Marshalltown to Ames within three, guaranteed under forfeiture bond if \$50,000, is proposition made by J. H. McBride, of Philadelphia, on behalf of himself and his associates, before Council; in addition, if city will grant franchise, Iowa Electric Railroad, which is proposed to be built, will connect with interurban system reaching from Eldora and Waterloo on north, Tama and Toledo on east, and Grinnell and Newton on south; company also promises to extend street car system of city, providing it is able to purchase the Jones & Hovey plant for \$250,000, less its indebtedness, to the fair grounds, city park, western limits of the city, and into the south part of town, within 18 months' time.

Oelwein, Ia.—Construction of interurban line to Strawberry Point is being considered.

Red Oak, Ia.—Red Oak and Northeastern Railway is preparing plans to begin construction on railway from this city through Greenfield to Des Moines; distance 110 miles.—W. L. Sonntag, General Manager.

West Union, Ia.—B. W. Newberry and J. C. Flenniken, Strawberry Point, are interested in proposition to build 20-mile electric railway from Oelwein to Strawberry Point.

New Orleans, La.—Work will begin within 60 days on construction of electric line between this city and Grand Isle; distance 12.5 miles.—W. T. Stephens, Chief Engineer, New Orleans and Seashore Railway.

Boonton, N. J.—Permission to construct, maintain and operate trolley line through certain streets has been obtained by Morris County Traction Co.

Albuquerque, N. M.—Company has been formed by residents of eastern portion of city for construction of electric street car line, for which a franchise has already been applied for.

Pulaski, N. Y.—E. D. Bennett is interested in projected electric railway between Sidney and Treadwell; length 21 miles.

Cadiz, O.—Council has been asked to grant franchise to construct and maintain street railway.—W. S. Cessna, Mayor.

Lawton, Okla.—J. S. Danneck and D. L. Sleeper have applied for franchise to operate street railway.

Condon, Ore.—Wasco County Electric & Power Co. is planning construction of its proposed railway in the Deschutes and John Day Valleys south.—George S. Carpenter, President; W. H. Hurlburt, Chief Engineer.

Forest Grove, Ore.—United Railways Co. has been granted a franchise by Council to extend its railway into this city.—A. C. Emmons, Secretary.

Gettysburg, Pa.—Borough Council has given Hanover & McSherrystown Street Railway Co. franchise to enter town at its eastern boundary and run single track road on Hanover and York sts.

Lebanon, Pa.—Council is considering bill granting franchise to Ephrata & Lebanon Street Railway Co. to use streets of this city.

West Newton, Pa.—Pittsburg, McKeesport & Westmoreland Railway Co. has been granted franchise to build electric railway.

Rock Hill, S. C.—J. M. Cherry is considering building of electric street railway.

Fort Worth, Tex.—Fort Worth, Mineral Wells & Northwestern Interurban Railroad has applied for charter to build electric railway from this city to Mineral Wells via Weatherford; distance 54 miles.—L. C. Cole and Paul S. Hurley, Fort Worth; J. S. Hanford, Beaumont, and James A. Watkins, Little Rock, Ark., Incorporators.

Walnut Spring, Tex.—Judge Sadler and J. H. Farr, Glenn Rose, are interested in construction of electric railway from this city to Glenn Rose.

Logan, Utah.—Council has granted Ogden Rapid Transit Co. franchise to extend street railway from the Logan depot to the Agricultural College; distance three miles.

Charlottesville, Va.—Charlottesville & Albemarle Street Railway Co. will build extension to Lambeth Field.

Seattle, Wash.—Proposed ordinance granting to Seattle Electric Co. a franchise on 6th ave. Northwest between West 45th st. and West 55th st. and on 5th ave. Northwest between West 55th st. and West 46th st., a line which it promised to build three years ago, has been recommended for passage by Corporations Committee of Council.

Seattle, Wash.—Corporation Committee is considering granting of franchise to Seattle Electric Co. for line on 14th st. N. W.

Vancouver, Wash.—Tum Tum Mountain Railway has been incorporated to build electric railway to connect Chelatchie, Prairie, Amboy, View, La Center, and Ridgefield; distance 40 miles.—A. Aronson and H. J. Hener, Incorporators.

Wenatchee, Wash.—George H. Ellis, E. M. Tipper and W. R. Powell are interested in construction of electric road between this city and Waterville.

Menomonee Falls, Wis.—The Milwaukee Electric Railway & Light Co. has applied to Board of Trustees for franchise to extend electric railway through this city; company also proposes to build extension from Milwaukee to Beaver Falls.

Hartland, Ont., Can.—John E. Stewart and Hon. A. B. Donworth are interested in construction of electric railway from this city to Foreston, N. B.

St. Catharines, Ont., Can.—Niagara St. Catharines & Toronto Railway will purchase material for eight miles of single track for its extension from Welland to Port Colborne.—E. F. Selxas, General Manager.

BIDS RECEIVED AND CONTRACTS AWARDED

Helena, Ark.—E. C. Horner announced the letting of the contract for the building of an interurban line between Helena and West Helena, the new manufacturing suburb of this city, to R. L. Leonard. The motive power is to be electricity, and the cost of the road is to be about \$40,000, besides the cost of erection of a modern electric plant, which will be installed in West Helena; work will be begun immediately.

BRIDGES

Pine Bluff, Ark.—Jefferson County will issue \$175,000 bonds for construction of bridge across Arkansas River.

Pasadena, Cal.—Directors of Board of Trade has authorized President Off to appoint Committee of 25 to formulate recommendation for bridge across Arroyo Seco.

Redwood City, Cal.—Council has received petition for lift bridge across creek at foot of East Bradford st.

Manatee, Fla.—Manatee Bridge Co. has been incorporated to construct bridge across Manatee River from this city to point between Ellenton and Palmetto.—C. H. Davis, President.

Batavia, Ill.—Contract will be let about October 1 for bridge and culvert work contemplated by Highway Commissioners.—H. W. Shaw, Town Clerk.

Streator, Ill.—Ralph Modjeska will prepare plans for bridge over river; contract will be let about October 4.

Fort Wayne, Ind.—County Council has appropriated \$26,000 for small bridges and culverts and \$6,300 for repairs to bridges; also \$20,000 for bridge on site of present Itdesill ave. bridge.

Indianapolis, Ind.—City Engineer Miller will prepare plans for bridge across Pogue's Run at Commerce ave.

Indianapolis, Ind.—Plans and specifications for bridge to be erected across canal at Indiana ave., to replace old yellow bridge which recently collapsed, have been completed by City Engineer Miller.

Rushville, Ind.—Rush County Commissioners have appropriated \$16,675 for bridges; out of this amount bridge will be built over Flatrock River.

Lexington, Ky.—County is considering erection of bridge over Boone's Creek.

Flint, Mich.—Board of Supervisors will soon let contract for constructing bridge over Flint River; cost \$18,000.

Wyandotte, Mich.—P. N. Jacobsen, Detroit, has made application to Secretary of War for permission to construct bridge across Detroit River from this city to Island of Grosseille.

Bemidji, Minn.—Beltrami Board of County Commissioners has decided to call for bids for bridge across Mississippi River; also for culverts on State road No. 4.

Sumner, Miss.—Town will issue \$6,000 bonds for erection of bridge across Cassidy bayou.

Darby, Mont.—District No. 1 of Forest Service will construct bridge over Bitter Root River.

Dayton, O.—Council is considering ordinance to sell \$9,000 bonds to construct bridge across canal at Webster st.

Tishomingo, Okla.—Bids will be received at once for bridge and road improvements; cost about \$100,000.—H. A. Hatcher, City Engineer.

Roseburg, Ore.—Burt Brown and P. Collop will at once erect single truss bridge over Deer Creek.

Bethlehem, Pa.—Lehigh and Northampton County Commissioners have adopted plans for bridge over Lehigh River as prepared by County Engineers Reese and Rathbun.

McKees Rocks, Pa.—County Engineer J. G. Chalfant, Attorney Homer N. Young and James N. Moore, of Coraopolis, have been named as viewers by Court of Quarter Sessions for new bridge or viaduct petitioned for by residents of McKees Rocks and Chartiers Township; proposed bridge will span Chartiers Creek from Singer ave., McKees Rocks, to Wind Gap ave., in Chartiers Township.

Pittsburg, Pa.—Public Works Committee has approved ordinances authorizing contracts for \$5,000 foot bridge on Gist st. and rebuilding Larimer ave. bridge; cost \$175,000.

Pittsburg, Pa.—Business men are considering proposed plan of connecting the South Hills district to uptown business district of Pittsburg by double-deck bridge to extend from 6th ave. and Forbes st. across Monongahela River to Brownsville ave. and continue by tunnel through hill.

Reading, Pa.—Berks County Commissioners did not receive any bids for repair of three-arch stone bridge across Maiden Creek.

York, Pa.—Bridge Committee will consider erection of bridge at College ave.—J. E. Weaver, Mayor.

Woonsocket, R. I.—Joint Standing Committee has recommended \$1,100 appropriation for bridge over Hamlet trench.

Knoxville, Tenn.—Louisville & Nashville Railroad Co. has submitted proposition to Mayor John M. Brooks and Alderman James H. Welcker, of the Asylum Avenue Viaduct Committee, granting city privilege of building straight bridge across the L. & N. tracks and allowing city to use right-of-way over tracks.

Pearlsburg, Va.—Giles County will vote on \$30,000 bonds to construct two steel bridges across New River.

Portsmouth, Va.—Street Committee will at once advertise for bids for construction of concrete bridge at Union causeway; cost \$3,500.

Benwood, W. Va.—Plans are being prepared by Albert Lucius, New York, for bridge across Ohio River; cost \$300,000.

BIDS RECEIVED AND CONTRACTS AWARDED

Red Bluff, Cal.—The Board of Supervisors received bids for construction of bridge over Thoms Creek at the Fennell crossing and for repairing Flournoy bridge, over the same stream near Paskenta; there were seven bidders for the Fennell bridge contract, as follows: Pacific Construction Co., \$20,570; Merry-Elwell Co., \$22,375; Western Bridge Co., \$20,947; Clark & Henery Co., \$23,247; Hyde-Harjes Co., \$21,950; C. W. Swain, lone, \$23,853; Cotton Bros., \$20,997. For the Flournoy bridge contract the bids were as follows: Pacific Construction Co., \$5,890; Merry-Elwell Co., \$6,382; Western Bridge

Co., \$6,124; Clark & Henery Co., \$6,283; Hyde-Harjes Co., \$6,487; San Francisco Bridge Co., \$6,000; Cotton Bros., \$6,540. The Pacific Construction Co. was awarded both contracts, and George Hoag was appointed to superintend the work at a salary of \$5 per day.

Redding, Cal.—Contract for building an extension to the bridge across the Cottonwood Creek at Cottonwood and making certain repairs was awarded by the Board of Supervisors to W. S. Bernard, of Anderson, for \$1,949; the unsuccessful bidders were: Burtis & Wagner, \$2,700; William Stephens, \$2,667; and Merry Elwell Company, \$2,730.

Danville, Ill.—Committee on Bridges of Board of Supervisors and the Road Commissioners of Catlin Township have awarded contract for constructing the new bridge at Rocky Ford in Catlin Township to Attica Bridge Co., at \$10,998.

Council Bluffs, Ia.—Contracts for the construction of concrete bridges over Indian Creek at Benton st. and 8th st. were awarded by Council, James Saguin being given contract for the Benton st. bridge at \$5,500, and E. A. Wickham for 8th st. bridge at \$7,492.

Greenwood, Miss.—The Board of Supervisors has let contract to the W. T. Young Bridge Co., for the construction of an iron bridge across the Tallahatchie River, three miles north of Greenwood, to cost almost \$20,000.

Kansas City, Mo.—Contracts for building bridge, 4,000 ft. long, across the Missouri River, were let as follows: Substructure, J. J. O'Connor, 437 Spruce st.; superstructure, McClintock Marshall Co., Pittsburg, Pa.

Missoula, Mont.—O. E. Peppard, city, was awarded two bridge contracts by the County Commissioners; Mr. Peppard's bid for one 100-foot combination span at Buford was \$1,095, while his offer for the construction of two 220-foot spans at Westfall was \$8,243.

For the bridge at Westfall to cross the Missoula River, the Puget Sound Bridge & Dredging Co. presented two bids on three sets of plans and calling for an expense of \$9,715, \$7,707 or \$8,551; A. Y. Bayne & Co., of Minneapolis, bid \$9,950; Burrell Bridge & Construction Co., \$9,800; Midland Bridge Co., Kansas City, \$9,897; William Oliver Bridge Co., Spokane, \$9,300; Central States Bridge Co., Indianapolis, \$8,974; J. F. Harrington, of Missoula, three bids, \$8,297, \$8,394, \$8,506; O. E. Peppard, of Missoula, four bids, \$8,243, \$7,537, \$9,200, \$8,500.

On the bridge at Buford the bids were as follows: William Oliver Bridge Co., two bids, \$1,200, \$1,325; J. F. Harrington, two bids, \$1,020, \$1,155; O. E. Peppard, four bids, \$925, \$1,150, \$1,095, \$1,500.

Plainfield, N. J.—The Road Committee of the Union County Board of Freeholders met at the office of County Engineer F. J. Hubbard to receive bids for the construction of three culverts and one bridge on Terrill road, now in course of construction, and Arthur E. Smith, city, being low, \$990, was awarded the entire contract; other bids were as follows: Plainfield Cement Stone Co., \$1,024; R. G. Bush, \$1,355; Schwiers-Sutton Co., New York, \$1,479.

Trenton, N. J.—On his bid of \$3,800, Thomas J. McGovern received the contract for building a steel and concrete bridge over Honey Brook, on the Pennington and Princeton road; other bids were as follows: Antonio De Lucia, \$4,440; Nelson Merydible Co., \$4,490; Richard B. Newton, \$4,500; John O. Ege, \$4,952.

The contract for building an iron pipe culvert and retaining wall on the new Pennington and Princeton road was given to Antonio De Lucia, whose bid was \$588; other bids were: Richard B. Newton, \$600; John O. Ege, \$637; Thomas J. McGovern, \$934.

Pomfret, N. Y.—Bids have been opened by the Town for constructing a reinforced-concrete bridge span 80 ft., width of driveway 30 ft., with two 6-ft. sidewalks; contract awarded to Knoblock & Shelton, of Erie, Pa., at \$5,587.—Henry Peterson, of Fredonia, Town Superintendent.

Cincinnati, O.—John Nickson has secured the contract for erecting a bridge and fill on Lowland road over Muddy Creek for \$5,343.—J. H. Sundmaker, Chief Engineer, Board of Public Service.

Sandusky, O.—Bids were opened, Sept. 3, by County Commissioners for constructing a 30-ft. span arch bridge 80 ft. long across Pipe Creek on Milan road, Perkins Township, and contract was awarded N. E. Hawkins, at \$4,726; other bidders were: G. W. Doerzluck, \$4,836; Sievert Bros., \$5,757; L. B. Battefeld, \$6,370; Frank Siles, \$6,500; Truett & Rickman, \$7,269.

Philadelphia, Pa.—The McNichol Paving & Construction Co. submitted the low bid of \$52,000 for building two steel plate girder bridges, on concrete abutments, on the line of Tabor st., under the North Pennsylvania Railroad and the Tabor branch of the same

road, in the Forty-second Ward; McCormick & Co., who bid \$56,000, were the next low bidders; the McNichol concern specified eight months for completion and the McCormick nine months. The Penn Bridge Co. bid \$17,689, and four months for completion, the low figure, for a concrete encased steel highway bridge, 70 ft. wide, on the line of 65th st., over railroad in the Fortieth Ward. The other bidders were: McMenemy, \$23,800, six months; McNichol Paving & Construction Co., \$21,800, eight months; McCormick & Co., \$18,300, eight months; David Peoples, \$23,300, six months; M. & J. B. McHugh, \$22,200, six months; C. P. Bower Construction Co., \$24,180, four months.

Littlelot, Tenn.—Hickman County Commissioners have awarded contract to Nashville Bridge Co. to construct steel bridge over Duck River; cost \$15,000.

MISCELLANEOUS

Yuma, Ariz.—Board of Supervisors has accepted plans submitted by Architects R. B. Young & Son, Los Angeles, Cal., for the proposed jail.

Los Angeles, Cal.—Council will call election to vote on \$3,000,000 bonds for harbor improvements.

Oakland, Cal.—Board of Public Works will purchase \$2,200 automobile for use of Sanitary Inspector.—F. R. Thompson, City Clerk.

Redwood City, Cal.—Surveyor Newman has estimated cost of improving Dingee Park at \$107,000.

San Francisco, Cal.—Board of Park Commissioners has decided that concrete breakwater should be constructed in vicinity of Bay Chalet at a cost of \$8,000; breakwater is to be 250 ft. in length and work is to begin at once.

New Haven, Conn.—Citizens will vote October 4 on installation of incineration plant.

Washington, D. C.—Health Officer Woodward has recommended erection of new pound and stable at cost of \$23,500.

Washington, D. C.—Latin-American government has granted business man concession to build 1,000-ft. dock along water front of certain port; work is to be completed within 2½ years; same party was also granted 150 ft. of water frontage on which to construct crematory within same period.—Address No. 3850, Bureau of Manufactures.

Washington, D. C.—H. B. Davis, Inspector of Plumbing, has recommended installation of public baths and new bathing beach; also appropriation for two public comfort stations.

Ocala, Fla.—City will soon let contract for remodeling market; cost \$5,000.—McIver & McKay, Architects.

Pensacola, Fla.—Bids will be received September 29, noon, for \$100,000 improvement bonds.—R. M. Bushnell, Chairman Board of Bond Trustees.

Pensacola, Fla.—Board of County Commissioners has authorized advertisement for bids for erection of \$75,000 county jail.

Atlanta, Ga.—Citizens will vote December 15 on \$250,000 bonds for City Hospital.

Moline, Ill.—Booster Club will urge establishment of parks and public playgrounds.—E. E. Morgan, President.

Boonville, Ind.—Warrick County Council has appropriated \$10,500 to purchase voting machines; bids will be advertised at once.

Indianapolis, Ind.—Board of Public Works has asked additional \$30,000 appropriation for use of Street Cleaning and Sweeping Department.

Indianapolis, Ind.—Board of Public Works has asked City Comptroller Breunig to recommend \$3,000 appropriation for collecting ashes from apartment houses during October.

Mishawaka, Ind.—City is in need of more garbage wagons.—P. J. Clifford, Street Commissioner.

Pittsburg, Kan.—Dr. Hunter is urging the installation of public baths.

Pittsburg, Kan.—Council is considering election on \$40,000 bonds for improvements to Lincoln Park.

Baton Rouge, La.—Finance Committee is considering establishment of suburban park.

Mandeville, La.—Council is considering loan of \$20,000 for construction of breakwater fronting city and reclaiming 300 ft. of beach.

New Orleans, La.—Acting City Engineer Willis will soon complete plans for garbage stations to be erected on river front.

Lynn, Mass.—Committee on Finance will purchase police van similar to one in use in Suffolk county.

Kalamazoo, Mich.—Alderman Murphy is urging installation of street signs at all corners.

Kansas City, Mo.—George E. Kessler, New Orleans, is preparing plans for public garden for W. L. Rock; cost, exclusive of ground, \$15,000.

Bayonne, N. J.—City Park Commission has decided upon comprehensive plan for

beautifying city streets with shade trees.—Alexander Christie, President.

Jersey City, N. J.—Finance Board is planning \$300,000 bond issue for establishment of new parks and playgrounds in several parts of the city.

Summit, N. J.—Plans have been submitted by Architect William A. Balch for remodeling Colonial Hall building in Springfield ave.; property was recently purchased by city and is to be converted into City Hall.

Trenton, N. J.—Board of Park Commissioners will enlarge pond in Cadwalader Park to twice present size.

New York, N. Y.—Board of Aldermen has adopted resolutions for municipal bathing pavilion at foot of Concourse, Coney Island, and for converting ground at foot of Hudson ave., Brooklyn, into public park.

New York, N. Y.—Bids will be received September 23, noon, for furnishing all labor and materials required for removal of snow and ice in Boroughs of Bronx, Manhattan and Brooklyn.—W. H. Edwards, Commissioner.

New York, N. Y.—Public Service Commission is considering with its Engineers new subway route, which, if eventually approved and built upon, will be beginning of a north and south west side route under 8th ave. and streets below it, connecting with Pennsylvania station at 31st st. and affording connection through cross-town route under 59th st. with the Queensboro bridge and a new elevated line which the Commission proposes to authorize.

Asheville, N. C.—C. F. Ambler, city, will purchase metal road signs with lettering stamped upon or riveted into plate.

Columbus, O.—Plans and specifications for loading station to be built in connection with garbage disposal plant, after plans by City Engineering Department, are ready for figures.

Hamilton, O.—Proposals will be received until Oct. 4, noon, for the purchase of \$22,300 4 per cent, annual, 15-year viaduct and storm sewer improvement bonds.—H. A. Grimmer, Auditor.

Toledo, O.—Mayor Brand Whitlock has approved ordinance enacted by Council to issue \$300,000 bonds, in addition to \$525,000 previously issued, to build bridge across Maumee River at Cherry st.

Harrisburg, Pa.—Herbert Kelsey, Philadelphia has drawn tentative plans for public comfort station on Market square.

Philadelphia, Pa.—City has secured site on Race st. for erection of police and patrol station.

Pittsburg, Pa.—Public Works Committee has approved ordinance authorizing purchase of \$2,000 automobile for Bureau of Surveys.

Galveston, Tex.—City Commission has decided to stand half of expense of constructing from two to five groins or small jetties out into gulf from the base of the sea wall to test this method of preventing erosion.

Salt Lake City, Utah.—Council has appropriated \$1,500 for purpose of rock bank of City Creek canyon.

Salt Lake City, Utah.—City has decided to create public park from 1st South to 2d South sts.

Portsmouth, Va.—Police Commissioners have asked for six pistols, six pairs of handcuffs, 25 night sticks and 12 flash lights.

Portsmouth, Va.—Council has authorized Street Committee to prepare specifications for removal of garbage and to advertise for bids for same.

Roanoke, Va.—Citizens will vote December 11 on \$300,000 for City Hall and site.

Seattle, Wash.—Councilman Eugene Way

proposes municipal system of garbage collection and destruction; bill, as introduced in Council, provides that city be divided into districts in order that suitable plant for destruction may be installed.

Seattle, Wash.—Council is considering ordinance authorizing purchase of automobile for Building Department.

Seattle, Wash.—Council is considering \$25,000 appropriation for stable at foot of Lake Union.

Charleston, W. Va.—City has secured plot at State and Capitol sts. for park purposes; gift of Henry G. Davis, of Elkins.

Verdun, Que., Can.—City has awarded \$150,000 municipal bonds to St. Cyr Gauthier & Fregon at \$106.06.

BIDS RECEIVED AND CONTRACTS AWARDED

Oakland, Cal.—Three bids for the automobile which the city is to provide for the Street Department were received by the Board of Public Works, the lowest being that of Former Supervisor John Mitchell for the Western Electric Vehicle Co., who offered to supply the department with a 40-hp. Kissell car for \$2,200; others were: F. R. Fogial, at \$2,250, and the Middleton Motor Car Co., at \$2,650.

San Francisco, Cal.—Board Public Works has awarded contract for three sanitary automatic street flushing machines to W. T. Martin Machinery Co., at \$8,250.

Pensacola, Fla.—Henry Monk, city, has been notified by the War Department that he has been awarded contract for erecting the big sea wall around Fort McRae on the gulf side of the entrance to Pensacola harbor; he was the lowest of more than a dozen bidders, receiving the contract at \$72,800; the wall is to be of concrete, 1,500 ft. in length, 13 ft. high and 20 ft. at the base, gradually decreasing in width and being 8 ft. at the top.

Fort Wayne, Ind.—The County Commissioners let the contract for the automobile to travel around the county to the lowest bidder, at \$1,675, which was put in by the Auburn Automobile Works; the machine will be a 40-hp. one and must be delivered according to contract in one month; three concerns presented bids.

New Orleans, La.—The Board of Port Commissioners have awarded contract for new lumber wharf to be erected above Napoleon ave. to A. T. Patterson for \$19,931.36; wharf is to be 1,200 ft. long and the contract price represents the labor of building it, as the Dock Board will furnish the material.

Bay City, Mich.—Bids have been received by City Park Commission for constructing a retaining wall 1,000 ft. long on the Saginaw River at Center ave., from plans of Ambrose V. Powell, Chamber of Commerce Bldg., Chicago, Ill., and contract has been awarded to A. J. Dupuis & Co., 1109 Ford st., Detroit, Mich. They bid for revetment sub-structure \$21.65 per lin. ft., superstructure of concrete \$6.95 per lin. ft., and foundation piles 21 cts. per ft.

Long Branch, N. J.—The following proposals for the repairing of the jetty and curbing at North Long Branch were opened by Council: George Woolley & Co., for building the jetty, \$5 per lin. ft.; for furnishing and setting 15 piling and cribbing, \$5 per pile; for putting on stringers, bolting same and trimming off piling, \$200; for furnishing and setting piling in jetty, \$5 per pile. Thomas Proctor, for repairing jetty, \$700; for repairing cribbing, \$400; for driving extra piling, \$6 per pile. Proctor secured contract.

Newark, N. J.—Bids were received by the Shade Tree Commission for 4,000 shade trees for fall planting; the bids ranged as

follows: Norway maples, \$1 to \$2.50; Oriental planes, 85c. to \$1.64; European lindens, 50c. to \$2.50; red oaks, \$1 to \$2; pin oaks, 65c. to \$1.60; horse chestnuts, 50c. to \$2; Carolina poplars, 50c. to 85c.; bolleana poplars, 70c. to \$1.25. There are 1,000 each of maples and planes to be set out this fall.

Bids were also received for the construction of the proposed public comfort station in Military Park; proposals for the entire contract were as follows: E. M. Waldron & Co., \$15,975; J. Allen Conklin, \$13,288; Thomas J. Mackinson & Co., \$14,490, and Walter E. Isetts & Co., \$16,323. The advisability of awarding the contract to the lowest bidder was referred to Commissioner John C. Ely.

Separate bids were also received as follows: For heating and ventilating, Zimmerman Co., \$1,022; David C. Seymour, \$831; Elias Beria, \$933; F. J. Kearny, \$890; Jaehning & Peoples, \$800; plumbing and gas piping, Zimmerman Co., \$4,269; Elias Beria, \$4,600; F. J. Kearny, \$4,480; Jaehning & Peoples, \$4,185. John Callan submitted a bid for \$674 for the cabinet work.

Trenton, N. J.—On its bid of \$39,500 the Delaware River Quarry & Construction Co., of which Robert A. Montgomery, of Lambertville, is the head, made the lowest tender to the Board of Freeholders for the construction of the Cadwalader Park tunnel. The tunnel will be constructed opposite Parkside Avenue, where a small brook now runs, and will pass under the tracks of the Belvidere Division of the Pennsylvania Railroad Co. and the feeder. After it is completed the present feeder bridge and grade crossing at Lovers' Lane will be abandoned. The bids were as follows: Delaware River Quarry & Construction Co., \$39,500; Filbertine Paving & Construction Co., Philadelphia, \$46,614; McGovern Paving & Construction Co., Trenton, \$49,800; Hawman Bros., Reading, Pa., \$58,750; Merrill, Ruckgaber & Co., Ogden, N. Y., \$58,800; T. M. McLeod Co., New York, \$59,450; Newton A. K. Bugbee & Co., Trenton, \$61,780; Gibbs & Morgan, Trenton, \$63,300; Arthur E. Smith, Plainfield, N. J., \$64,134; F. M. Stillman, Jersey City, \$72,333.

Enid, Okla.—Bids were received as follows for improving Boggy Creek: J. W. Chaney & Son, Enid, \$41,526 (awarded contract); Tulso Eng. & Constr. Co., \$46,322; John Striffler, \$43,862, and C. B. Porter, Enid, \$45,359.—J. P. Rickard, City Engineer.

Rochester, Pa.—Bids for building a retaining wall on Byron alley were opened and McDonald and Hartman were awarded the contract on a bid of \$5.60 a cu. yd. W. D. Shaner submitted a bid of \$6.40 a cu. yd.

Baumont, Tex.—The bid of the Messrs. Hart, Blenvenu & Daspi, of New Orleans, La., to audit the city's accounts and install a system of bookkeeping was accepted; the bid was on a basis of \$25 per day, and it is estimated that it will cost a total of \$1,000 to \$1,500.

Eagle Lake, Tex.—The Commissioners Court has accepted the bid of N. C. Jensen, of Houston, for repairing the Court House and jail and putting new finishings in the district court room at \$19,575; other bidders for this work, all from Houston, were: J. R. Morin, \$21,820; C. C. Wenzel, \$33,120; Brooks-Gordon Construction Co., \$24,800.

Galveston, Tex.—State Board of Health, Austin, has awarded to R. C. Gracey, city, the contract to construct certain dock and slip work at State Quarantine Station, at \$18,900.—L. C. Evans, 3724 Broadway, Architect.

Galveston, Tex.—Galveston County Commissioners' Court has awarded contract to L. Heffron, city, for furnishing county with 20,000 tons of rip-rap to be placed along foot of seawall; approximate cost \$60,000.

TOO LATE FOR CLASSIFICATION

STREET IMPROVEMENTS

Birmingham, Ala.—Council has ordered improvement of four streets; City Engineer will advertise for bids on brick, granitoid block, bitulithic and asphalt paving for paving 20th st., west.—H. E. Shropshire, Jr., City Clerk.

Birmingham, Ala.—City Engineer Maury Nicholson has estimated cost paving with bitulithic 26th st. at \$13,000, and Cliff road at \$8,900.

Jacksonville, Ala.—Duval County will vote Oct. 26 on \$1,000,000 bonds for good road purposes.

Banning, Cal.—Forest Service has donated \$2,035 toward finishing five-mile stretch of the Banning-Idylwild road, which will connect this place and the mountain resort; Supervisors will open bids for construction on October 13; estimated cost about \$18,000.

Hayward, Cal.—Oakland Traction Co. will pave its portion of lower Castro st.

East St. Louis, Ill.—Contract will be let at once for improvement of Illinois ave.

Peoria, Ill.—City is considering paving of California ave. with brick; cost \$13,972; Hayes st., \$2,957.82, and Locust st., \$2,749.—Clay Belsley, City Engineer.

St. Augustine, Fla.—Chief Townsend has estimated cost of paving Orange st. at slightly over \$10,000.

Joliet, Ill.—Citizens have petitioned for paving Jackson and Scott sts.

Peoria, Ill.—Estimates are being prepared by City Engineer Belsley for paving Prospect ave. with brick.

Hutchinson, Kan.—Bids will be received Sept. 28, 3 P.M., for 36,683 sq. yds. of vit. brick pavement.—G. L. McLane, City Engineer; Ed. Metz, City Clerk.

Franklin, Ky.—Construction of 15 miles of rock and gravel roads is being considered; cost \$27,000.—A. H. Hill, County Clerk.

Glasgow, Ky.—Bacon County will construct six miles of stone road; cost \$18,000.—N. J. Fisher, County Commissioner.

Lexington, Ky.—City is considering extension of Bowyer st.—P. P. O'Neill, City Engineer.

Mandeville, La.—Council has ordered election on \$20,000 bonds for improving Beach and Shilling sts.

New Orleans, La.—Council has passed ordinances for paving eight streets.

Shreveport, La.—City will issue \$417,000 bonds; of this amount \$250,000 will be for street paving and sewers.

Baltimore, Md.—Eastern Railway Supply Co., 413 American Bldg., will purchase scarifier, 10-ton road roller and 500-gallon sprinkler.

Lawrence, Mass.—Board of Aldermen is considering paving of Merrimack st. with granite block; cost \$9,000.

Lowell, Mass.—Council is considering order appropriating \$1,000 for raising and repairing sidewalks on the North Common.

Malden, Mass.—Board of Aldermen is considering \$6,000 order for building subway under B. & M. tracks at Florence st.

Port Huron, Mich.—Residents of Gratiot ave. and State st. have postponed the repaving of these streets with macadam.

Missoula, Mont.—City is considering paving Higgins ave.

Prentiss, Miss.—Jefferson Davis County will construct 350 miles of roads during year; cost \$21,000.—J. M. Burrow, County Commissioner.

Butte, Mont.—Council has passed resolutions for laying sidewalks on six streets.

Atlantic City, N. J.—Ordinance has been introduced into Council calling for widening of Ventnor ave. from Albany to Jackson into a boulevard 185 ft. wide.

Jersey City, N. J.—Shade Tree Commissioners will soon award contract for laying cement walks in Leonard Gordon Park.

Batavia, N. Y.—Board of Supervisors has petitioned State Highway Commission to improve a two-mile section of the Allegany road, section of the Batavia-Elba road two miles, section of road in Oakfield five miles, and section in Darien eight miles long.

Lockport, N. Y.—Niagara County has set aside \$100,000 for construction of roads; work will begin in spring.

Watertown, N. Y.—Board of Public Works has passed resolution asking Council for \$1,000 for macadamizing Flower ave. and \$1,000 for furnishing macadamizing of William st.

Akron, O.—Resolutions ordering County Surveyor to prepare plans and estimates for improvement of three county highways have been passed by County Commissioners.

Coshocton, O.—Engineer A. M. Fisher has prepared estimates for cost of paving Locust st.; total cost of paving with asphalt is estimated at \$22,124; cost of brick paving is estimated at \$16,481.90; both of these estimates are for a 24-ft. roadway.

Dayton, O.—County Commissioners have passed resolution which provides for the macadamizing of a half mile of the Troy Pike; estimated cost about \$7,000.

East Liverpool, O.—Engineer Kelly has estimated cost of paving 5,100 ft. of Lisbon Road at \$24,000.

Hamilton, O.—Council has passed resolution instructing City Civil Engineer to prepare plans for macadamizing and tarviating portion of Hamilton and Gregory's Creek turnpike within city limits.

Oklahoma City, Okla.—Putnam Co. will resurvey town of Okadrain; streets will be widened.

Dubois, Pa.—Council has passed ordinances providing for paving Railroad ave.

West Harrisburg, Pa.—Plans for the proposed State road from West Hamburg through Tilden and Upper Bern townships are completed.

Bristol, Tenn.—Construction of macadamized road from this city to Memphis is being considered; cost \$2,500,000.

Park City, Tenn.—Street Committee has decided to grade and macadamize three streets; cost \$8,000.

Anahuac, Tex.—Precincts Nos. 2 and 3 have voted \$65,000 bonds for building good roads.

Dallas, Tex.—Petition has been filed for concrete boulevard at Bell ave.

Fort Worth, Tex.—Residents are urging paving of 8th ave.

Salt Lake City, Utah.—Board of Public Works will advertise for bids for paving three streets; cost \$370,009; total distance 6½ miles.—L. C. Kelsey, City Engineer.

Bristol, Wash.—County Commissioners have voted to expend \$1,716 for State aid road purposes in improvement of 3½ miles of the Goldendale-Columbus road out of Goldendale.

BIDS RECEIVED

Wilmington, Del.—Following bids have been opened for building New London road in White Clay Creek hundred. The road is from Newark to Pennsylvania State line; distance 2.7-10 miles:

L. B. Jacobs, Newark, granite or trap rock bottom and surface, \$24,886; limestone, \$23,606; Amesite, \$30,210.

William C. Evans, Ambler, Pa., granite or trap rock, \$26,616.90; limestone, \$21,716.90; Amesite, \$28,682.25; asphaltum binder, \$26,600; tar binder, \$26,600; Warrenite, \$35,647.60.

Stewart & Donohue, Brandywine granite, \$22,057.52; Birdsboro trap, \$24,703.52; limestone bottom, \$20,332.52; Amesite, \$28,014.92.

Corcoran Construction Co., granite or trap, \$23,982; limestone, \$23,982; Amesite, \$22,256; asphaltum binder, \$31,196; tar binder, \$31,196; Warrenite, \$43,276.

B. F. Wickersham, Kennett Square, granite or trap, \$22,750; limestone, \$19,900; Amesite, \$26,614.75; Warrenite, \$37,612.

John A. Clark, granite or trap, \$23,900; limestone, \$22,800; Amesite, \$31,400; asphaltum binder, \$27,500; tar binder, \$25,500; Warrenite, \$34,000.

Horrigan Construction Co., limestone bottom, \$20,418.55; Amesite, \$27,383.85; Warrenite, \$32,359.15.

Rochester, N. Y.—The Board of Contract has made three awards of contracts for which bids were opened Sept. 15. Hinsdale st. macadam pavement was awarded to Rochester Construction Co. for \$3,417; Whitmore asphalt pavement to Whitmore, Rauber & Vicinus at \$2,971.50; Kellar and Briscilla sts. sewer to Henry Schoenfeldt at \$1,233.10. Contract for cement sidewalks in Elmwood ave. was not awarded, because the board thought the bid was so low that the contractor had made a mistake. Henry Schoenfeldt bid \$1,872.25, and as job involves large amount of grading, price seemed excessively low.

Peoria, Ill.—Committee on Grounds and Buildings has let contract for construction of concrete walks in South Park and a concrete barn therein to Clarence Miller, his bid being \$1.02 per sq. yd. and the lowest.

Edwardsville, Pa.—City has awarded contract for paving Main st. to D. M. Rosser; his bids were as follows: Bessimer brick, \$14,077.50; Clearfield, \$13,900.20; Porter, \$13,841.10; Pennsylvania Clay, \$14,077.50; Clymn, \$13,959.30; Standard, \$13,782. Only other bidder was B. G. Coon, who bid as follows: Bessimer, \$14,507.41; Clearfield, \$14,271.01; Porter, \$14,507.41; Clymn, \$14,271.01; Clay, \$14,152.81.

Kennett Square, Pa.—B. Frank Wickersham has received contract to macadam New London road, distance 2.7 miles, for \$22,750.

Milwaukee, Wis.—Contracts for creosote block pavements on streets surrounding Auditorium have been let by Board of Public Works. Three of the streets, State between Fifth and Seventh, Fifth between Cedar and State, and Cedar from Fifth to Sixth, were let to the Kettle River Quarries Co.

Sixth st., from Cedar to State, was awarded to J. B. Robbins.

Prices winning the bids were considered more than ordinarily low, and ranged from \$2.63 to \$2.78 per sq. yd.

SEWERAGE

Brighton, Ala.—Town has sold \$10,000 sewer bonds.

Tuscaloosa, Ala.—Citizens will vote Oct. 25 on \$25,000 bonds for construction of proposed sewer system.

Potrero, Cal.—City has decided to install new sewerage system.

Sacramento, Cal.—Colusa County has voted \$100,000 bonds for construction of sewer and water works system.

Wilmington, Cal.—City Engineer will prepare plans and specifications for construction of sewer system.

Westport, Conn.—Fire Board is considering plans for sewerage system.

Phenix City, Ga.—Council is considering installation of sewer system.

Rockford, Ill.—City is considering the construction of storm sewers in West End; cost about \$2,650.

Shreveport, La.—City will issue \$417,000 bonds; \$250,000 will be used for sewers and street paving.

Fergus Falls, Minn.—City Engineer will prepare plans and estimates for building sewer in Summit ave. west.

Hartington, Neb.—Citizens have voted \$10,000 bonds for installation of new sewer system.

Buffalo, N. Y.—Commissioner of Public Works F. G. Ward is preparing plans for sewer in eastern section of city.

Lockport, N. Y.—Board of Local Improvements has decided to employ civil and sanitary engineer and begin at once the construction of sewer system.

Hamilton, O.—Bids will be received Oct. 4, noon, for \$7,300 storm sewer bonds.—H. A. Grimmer, City Auditor.

Hiram, O.—Citizens are urging installation of sewer system.

Salem, O.—Sewer will be constructed on South Lundy st.; it will be 1,223 ft. long; estimated cost \$1,000.19.

New Castle, Pa.—City Engineer Milholland is at present engaged in revising plans of sewage disposal plant that city will be forced ultimately to build.

York, Pa.—Board of Public Works will soon advertise for bids for laying laterals in four streets.

Providence, R. I.—Council has adopted Mayor Fletcher's recommendation that main trunk sewer be built in Kinsley ave.

Corsicana, Tex.—Citizens have voted \$20,000 sewer bonds.

Morgantown, W. Va.—Residents of Wiles Hill are considering installation of sewers.

Janesville, Wis.—Storm sewer in Ravine st. will be extended.

BIDS RECEIVED

Decatur, Ala.—New Decatur Council has awarded contract to W. M. Leftwick & Co., Nashville, to build extension to the sewerage system through South and West New Decatur and passing through the western part of Decatur and emptying in Tennessee River. Contract is for \$19,403.20.

Angela, Ind.—Michaels & Musnick, of Marion, have been awarded contract to construct laterals to main trunk sewer at \$18,363.64; the Northern Construction Co., of Elkhart, the only other bidder, was about \$300 higher; bids opened Sept. 17.—Roy Hirst, City Clerk.

Edwardsville, Pa.—Following bids were received for sewerage upper Main st.: B. G. Coon, storm, \$922.68; sanitary, \$952.70; total, \$1,875.28. D. M. Rosser, storm, \$1,088.90; sanitary, \$1,078.50; total, \$2,167.40.

A. H. Coon, storm, \$855; sanitary, \$793.58; total, \$1,648.58; latter being lowest bidder was awarded contract.

WATER SUPPLY

San Francisco, Cal.—Commissioner McGilvray will visit Eastern cities to inspect high pressure systems for fire protection.

Springfield, Ill.—Council is considering extension and improvement of present water system.

Clinton, Ia.—Council has ordered the installation of six blocks of water mains.

Louisville, Ky.—Board of Public Works will let contract September 28 for 48 fire hydrants; cost about \$5,000.

Thompsonville, Mich.—Citizens will vote on \$5,000 bonds for improvement and extension of water works system.

Camden, N. J.—Water Committee has rejected all propositions looking to furnishing city with water from outside sources.

Jefferson, O.—Engineer Crisp has prepared plans for water system; cost \$45,000.

Chambersburg, Pa.—Council has instructed Water Committee to secure plans and prices for filter plant for Shioam.

Hamilton, Tex.—Citizens have voted bonds for system of water works.

Colville, Wash.—W. W. Tighman, W. C. Goss, N. J. Plant and F. A. Wilson, Marcus, have made application to County Commissioners for franchise to install system of water works for that town.

Colville, Wash.—County Commissioners have granted lone Water & Light Co. franchise to use public streets, alleys and highways for installation of its plant; franchise runs 25 years.—Daniel Morgan, Manager.

BIDS RECEIVED

Newburgh, N. Y.—The Pittsburg Testing Laboratory, through its New York office, offered to inspect the 30-in. pipe that has been ordered by the Water Board for the laying of the additional main from Washington Lake to West st., for 19 cents per net ton of 2,000 lbs. William R. Conrad, of Burlington, N. J., offered to inspect the pipe for 15 cents per ton of 2,000; Emanuel Derr, of Scottsdale, Pa., offered to inspect the new water main for 15 cents per ton, or he would do this work for \$1 per day. A representative of the Pittsburg Testing Laboratory, from its New York office, said his concern is an independent one, while some at least of those who inspect water pipe, are really in the employ of the U. S. Cast Iron Pipe & Foundry Co. that sells the pipe. The work was awarded to William R. Conrad, of Burlington, N. J., at 15 cents per ton of 2,000 lbs.

LIGHTING AND POWER

East St. Louis, Ill.—Committee from Lansdowne, Armourdale and McKinley place has asked council to grant right to Consumers' Electric Light Co. to erect poles and string wires in their locality.

Albany, N. Y.—Public Service Commission has authorized Cataract Power & Conduit Co., Buffalo, to issue \$149,000 bonds; proceeds are to be used for acquisition of property and extension and improvement of company's plant.

Pawling, N. Y.—Public Service Commission has authorized Pawling Electric Light, Heat & Power Co. to at once begin construction of proposed plant; \$20,000 bonds will be issued.

Martin, Tex.—Martin Electric & Power Co.'s plant has been destroyed by fire; loss \$60,000.

BIDS RECEIVED

De Land, Fla.—Council has let contract to De Land Light & Power Co. to install additional street lights on various streets.

FIRE EQUIPMENT

Anniston, Ala.—City is considering purchase of automobile truck; cost \$4,000.

Washington, D. C.—Architect Leon Dessez is preparing plans for model engine house to be erected on 12th st.

Havre de Grace, Md.—City will build and equip engine house; cost \$5,000.

Holyoke, Mass.—Fire Commissioners have advertised for bids for two automobiles, one to be used by Chief and other by flying squadron.

Worcester, Mass.—City is considering purchase of two automobile combination